Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME X.] NEW-YORK AUGUST 4, 1855. [NUMBER 47.

THE
Scientific American,
PUBLISHED WEEKLY
At 128 Fulton Street, N. Y. (Sun Buildings.)
BY MUNN & COMPANY.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Agents:
Federhen & Co., Boston. | Dexter & Bro., New York.
A. Winch, Philadelphia. | E. G. Fuller, Halifax, N. S.
S. G. Courtenay, Charleston. | S. W. Pease, Cincinnati, O.
Avery Bellford & Co., London | MM. Gardissal & Co., Paris.

Responsible Agents may also be found in all the principa cities and towns in the United States.

Single copies of the paper are on sale at all the periodica stores in this city, Brooklyn, and Jersey City.

TERMS—$2 a-year :—$1 in advance and the remainder in six months.

Wood Bearings for Journals and Shafts.

MESSRS. EDITORS—In No. 42, of the present volume of your paper, I saw a notice and drawing of a journal box, for a propeller shaft, which is claimed as an English invention; so far as the application of that particular kind of joint box, to propeller shafts, it may be an English application; but for almost every kind of journals, for ordinary machinery, both in the water and out of water, and for journals of very high velocity, and for heavy over-shot water wheel journals, with a slow velocity, and where the journals have been lubricated with oil, tallow, and water—I claim it to be an American invention of at least twenty years application.

I have had much experience, and perhaps have experimented as much in the application of wood for journal boxes as any other person in this country, for the past twenty years, and I am fully satisfied that there is nothing now known that is as good for that purpose, as wood, properly prepared.

For the benefit of your readers, I will give the result of my experience, and the conclusions I have arrived at on this important subject. The best wood in our forests for journal boxes, is the Soft or Silver Maple, which grows in wet or swampy land, —either the root, or the body of the tree as near the ground as it can be cut,—taken direct from the tree or root full of sap, and worked out in blocks or strips to suit, and then boil it in tallow that is simmering hot, but no hotter, (for if it is made too hot, there is great danger of charring the wood,) until the heated tallow drives the sap all out of the pores of the wood; then sink the blocks or strips in the tallow, and let them remain there until all are cold.—Now take the blocks or strips, and fit them into the iron pedestal box or into the grooves, as represented in engravings in No. 42, Vol. 10, with the end of the wood to the journal, and not to the side, as there represented.

This mode of preparing wood in tallow, I claim as original with myself; it changes the nature and quality of the wood, and makes a journal box that will be more durable than any other known substance, but in all cases the journal should revolve on the end of the wood, instead of the side, as many are in the practice of using it. Where it is practicable, the best lubricator for a journal arranged as above, is clear pure water.

O. H. P. PARKER.

Philadelphia. July 20, 1855.

[Mr. Parker's information is very useful. The figures referred to by him as published by us, showing the application of wood bearings for propelling shafts of large steamers in England, is not represented to be a new invention. We published them to show a new application, and also for the purpose of showing that they were held to be superior to the more common metallic bearings. Wood bearings for water wheel shafts were used two centuries ago. About two years since a correspondent informed us that, after many experiments, he discovered that molten lead, run into the pores of wooden boxes, formed the most perfect of all shaft bearings.

WAKEFIELD'S HAND SEED PLANTER.

The annexed engravings are views of an improved Hand Seed Planter, for which a patent was granted to Charles A. Wakefield, of Plainfield, Mass., on the 25th of July, last year, but not brought thus publicly into notice before.

Figure 1 is a vertical section of the planter with the plunger out, and figure 2 is a perspective view, showing a farmer *awake in the field*, planting his seed with ease, rapidity, and correctness.

A is the hopper or box containing the corn —it is filled through the lid, *a*. A' is a guide frame in front of the seed box, to direct the up-and-down movement of the embedding plunger, C, which, in its double movement, by the groove, *g*, and pin, *f*, alternately opens and closes a delivery slide, which works in a groove, *e*, in the seed box at its bottom. This slide has an aperture in it. As plunger C rises, a suitable number of grains of corn for a hill, is conveyed through the passage, *e*, into the receiving chamber, D. In the descent of the plunger, C, when planting, the delivery slide, is drawn back to take in a fresh supply of grain from the hopper, and hold it ready for another delivery, at the same time the plunger, in its descent, ejects the charge of corn previously fed down into D, and embeds it at the proper depth in the soil. The plunger, C, opens the receiving chamber, D, by pressing against the back plate of it, which is acted upon by spring E', to allow the grain to pass out, and also to close said chamber again when the plunger is drawn back, so as to retain the seed fed into it for the next hill. G is a flange projecting from the plunger, C, at its bottom, on the rear side, for guiding and holding the grain, when being embedded between it and the short front plate, H, which enters the ground and projects from the broad stop plate, I; this latter plate stops the further entrance of the implement into the soil. The side flanges project from the front plate, I, and serve, in conjunction with the elastic back plate of the chamber, D, and bottom plate, H, to scrape off the dirt adhering to the sides and edges of the plunger, C, when it is drawn out of the ground into the chamber, D. Any suitable device may be used for gauging the stroke of the plunger, to vary its depth of hole for the seed. E is the handle of the plunger, C, which is used as shown in fig. 2; it is placed obliquely to the plunger, and is used by the operator to give the plunger an oblique direction into the soil. The implement is carried and used as shown, like a walking cane, requiring no delay, and is easily operated. The person using it steps from hill to hill, striking the implement into the ground, like a cane, causing the short front plate, H, to enter the soil, the stop plate, I, to bear on the earth, and the plunger, C, to eject the corn or seed through the bottom of the receiving chamber, D, and force it to its required depth obliquely into the ground, after which, by raising the handle, the plunger, C, is elevated in the same oblique direction, the stop plate, I, answering for a fulcrum during lateral strain upon the plunger, in drawing it out, whereby the earth is shaken over the seed and covers it; the scrapers and side flanges also scrape back all soil from the plunger, making it fall on the seed, so that the perfect covering of it is thus fully insured. It is thus more certain in its operation than if it made the hole for the seed perpendicular, and carried the soil up instead of covering each hill with the implement, as it is rising out of the opening in the soil. The two simple motions of this implement or machine—only pressing down and lifting it up, like a walking stick,—by which the hole is made; the seed fed down and deposited; the seed box closed and the seed covered by the soil, makes it superior to those hand planters which require a number of motions to accomplish the same objects.

Hand seed planters are but of recent date, but their convenience and superiority to hand planting and covering with the hoe, have given them an extensive circulation in a very few years. One man, with a hand planter like this, especially in well plowed land, will plant four times as much corn, rice, beans, peas, &c., as four men, depositing the seed by the hand and covering with hoes. The economy of such an implement for every farmer, is self-evident. It is positively necessary that every machine, tool, and implement for a farm should be simple and easily repaired; without such qualities they will not find favor with our farmers. The inventor of this implement had his mind directed to these points when he invented it. It weighs about seven pounds, and the price is five dollars.

We were witnesses to the planting of one quarter of an acre of corn in twelve minutes, by one of these machines, and the work was cleverly done. This was on the farm of George Archer, Esq., Mount Vernon, N. Y. At this rate a man could easily plant 10 acres in a day.

More information may be obtained by letter addressed to Jerome, Wakefield, and Vining, New Haven, Ct.

Cementing the Soles of Boots and Shoes.

MESSRS. EDITORS—You are not quite correct in your answer to "J. H.," of this city, in your paper of June 30. Gutta percha and india rubber, in solution, will not unite firmly the soles of boots to the upper leather, if there is any oil or grease of any kind in the uppers; soles of well-tanned oak leather may be well united with gutta percha or india rubber cement, but hemlock tanned soles will hold together but a short time. I have tried most of these experiments. A. E.

Boston, July, 1855.

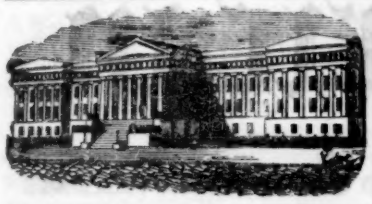
[We have seen soles cemented to uppers, said to be done by a mixture of gutta percha and india rubber dissolved in turpentine. We have united heels and soles of gutta percha to leather soles and heels, with gutta percha cement (gutta percha dissolved in turpentine,) for experimental purposes, but took no trouble to ascertain whether the leather was oak or hemlock tanned. The cement must be highly heated, and considerable pressure applied to the upper and sole, to make them adhere strongly.

Invention of Pottery.

MESSRS. EDITORS—The round sea snail the size of a man's fist in their circumvolutions, eject a kind of glutinous slime with their eggs, which, being combined in a small measure with the sand, forms an article resembling a piece of pottery, which no doubt first conveyed the idea to some of our ancestors of a jar or pitcher. They are frequently picked up on the ocean shore on Fire Island by the curious researchers in the hidden mysteries of the ocean. The manufacturing of pottery is coeval with history, and the idea very likely was conceived by the first inventor from those deposits.

F. D.

Fire Island, July 21st, 1855.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office,

FOR THE WEEK ENDING JULY 24, 1855.

MACHINES FOR CUTTING SHEET METAL—Cephas Appleboe, of Lyndon, Vt.: I do not claim the movable bar, A, the clamps, and one or two sets of rotary cutters, arranged and operating together as described, but I claim the combination therewith of the index limb or arc, the movable radial supporting arms, and their two end shears, the whole being applied together, and used to operate on a piece of metal or other material, and reduce it to the shape of an annular section, suitable for being bent into the shape of a conic frustum, in manner and for the purpose specified.

CUTTING BOOT AND SHOE UPPERS, SOLES, &C., FROM SHEETS OF INDIA RUBBER—John Arthur and Evan Arthur, of New Brunswick, N. J.: We claim, first, the cutting or separation of india rubber by placing it on a wet cloth, or other suitable moistened surface, and submitting it to the pressure of a heated die, having an edge of the form of the article to be cut, substantially as set forth.

Second, the combination of one or more reciprocating die frames, each carrying a set of dies with a stove, and with carrying and pressing apparatus to carry the sheet or piece of rubber, substantially as herein described, so that the dies by their reciprocating movement may be carried into the stove to be heated, and then returned, to cut or stamp out the pattern or article from the piece, as set forth.

Third, the method of raising the die frames to carry the dies, on their return movement towards the stove, far enough above the roller, D, for other die frames to pass below them by extending the ends, v v, of the side pieces, d d, of the said frames some distance beyond the pivots, g g, which connect them with the chain and providing pins, w w, for the ends, v v, of the die frames to strike against, to throw up the opposite ends carrying the dies substantially as described. Fourth, the swinging frame, r, with its fingers, 20, arranged and operating substantially as described, to conduct the points or ends of the patterns as soon as they are cut or separated between the roller, D, upon which the cutting is performed, and another roller, l, by which they are at once prevented curling it, and are conveyed along towards where they are delivered from the machines.

[Although punching knives are used in this apparatus, the separation of the rubber is, in reality, accomplished by melting; for the knives, being heated, melt their way through the caoutchouc. The cutters are placed on the surface of an endless belt, and arranged to rotate, in succession, through an adjoining furnace, in such a manner that while one knife is in the act of cutting, another is being heated by the fire. The wet surface on which the rubber is laid, in order to be cut, serves to prevent burning by the hot knives; it also causes the formation of steam along the seam at the moment of separation; thus a free and smooth edge is left upon the rubber, and the parts are prevented from adhering after the removal of the knives. This is a very ingenious and valuable invention. Rubber cutting has heretofore been a difficult operation. Ordinary knives will not act upon it as easily as many people suppose.]

WHIFFLE TREES—Archibald Bailey, of Blue Rock, Ohio, and Daniel L. Allard, of Rokeby, Ohio: We are aware that hooks or catches have been placed in the ends of the levers themselves, but such an arrangement we do not claim.

But we claim, in combination with the compound levers, b c, arranged and operated as herein described, the pivoted cam shaped catches or hooks, a a, for holding or instantly releasing the eock eyes of the traces, by which arrangement we secure the parts against imperfect action, and are enabled to embed all the parts within the single tree, as described.

FEEDING WATER TO STEAM BOILERS BY AUXILIARY ENGINES—William Ball, of Chicopee, Mass.: I claim causing the pipe, F, which conveys the steam from the boiler to the feed engine, to enter the boiler at the exact level at which the water is required to stand, for the purpose substantially as set forth.

PREPARING POTASH AND SODA—G. Thompson, of East Tarentum, Pa.: I claim the use of a tray and sector, constructed as described, for the purpose of dividing caustic soda, or potash, into parcels of convenient size and shape and of uniform weight.

SEED PLANTERS—Pierpont Seymour, of East Bloomfield, N. Y.: I claim, first, the combination of the movable side of the seed box, with angular hangings, c, spring, b' fig. 3, and inclined planes or wedges, e, or their equivalent, for the purpose of opening and closing said box, and thus to regulate the quantity of seed or substance to be delivered.

Second, I claim the slide plate, f, to prevent the seeds from clogging, as described.

Third, the combination of the angular levers, o, having their fulcrum on inclined standards, or its equivalent, with the rods, p, linking them to the drill tubes, m, in the manner and for the purposes set forth.

WASHERS FOR AXLES—A. E. Smith, of Bronxville, N. Y.: I claim inserting blocks of metal, or other equivalent hard substance, in packing washers made of leather or other equivalent flexible and yielding substance, substantially as and for the purpose specified.

OSCILLATING VALVES & GEARING FOR PUMPING ENGINES C. A. Wilson, of Newport Ky.: I do not claim producing an equilibrium of pressures on the interior surface of the oscillating valve. That has been more or less perfectly accomplished by many before me, and probably by that of Mr. Wright, of Rome, N. Y., and by Bloomfield's patents of A. D., 1854. But I have, as I believe, effected what has never before been accomplished, in balancing all pressures, both interior, and exterior, on the oscillating valve, arising from steam at the boiler tension expanding or exhausting, while at the same time I have relieved it from all weight of working gear, so that it has nothing to impede its motion, or cause wear in its chamber, except the friction developed by the pressure required on N, fig. 4, to produce a steam tight joint and its own weight.

I claim, first, balancing oscillating valves under all lateral pressures on the exterior, arising from steam or air, and regulating the exhaust ports, as described.

Second, balancing the end pressure in the interior, caused by steam in conical valves, by the annular recesses, b b, equal and opposite to a a, and the balance, piston, or steam valve on a beveled seat, as described.

Third, supporting the tripping apparatus, consisting of the angle, trip lever, toggle joint, and upper lever, or their equivalents, so as to relieve the valve from all weight and consequent friction and wear, as described.

Fourth, using the safety arm to insure and regulate the cut off, and the cam jogs, 12 12, of depth regulated by cutting set screws, or other equivalent devices for operating the same, as set forth.

Fifth, using the independent rod attached to the piston of the steam cylinder for working the valve gear, whereby bringing the steam cylinder and pump close to each other, space is economized, while power is gained, as has been described.

REFRIGERATORS—William Mowry, of New York city: I claim, first, the application and employment of a vessel or chamber, substantially such as described for containing both the ice and water together, serving the double purpose of a water cooler and frigorific body, in combination with the ordinary refrigerating box, chamber or other insulated non-conducting cooling apparatus, the whole operating in the manner substantially as set forth and for the use and purposes mentioned.

Second, I also claim the mode of ventilation described, by compelling the outer atmospheric air before entering the interior, to come into medium contact with the ice or other frigorific body, operating in the manner substantially and for the uses and purposes mentioned.

Third, I also claim the mode described of ventilating, in combination with the cooler and refrigerating chambers, as described.

GRAIN AND GRASS HARVESTERS—Jesse Urmy, of Wilmington, Del.: I claim, first, in combination with the driving wheel placed inside the gearing, as described, I claim the angular tongue, i, for preventing side draft, and at the same time allowing the horses to walk on the side of the standing grass or grain.

Second, I claim the described use of the balanced dogs, b b, under the driver's feet, for throwing the cutting apparatus in and out of gear.

Third, I claim making the parting and gathering board, f, hinged and adjustable, as set forth.

Fourth, I claim regulating the rise of the sheaves by means of the several ranges of gearing, p p, within the driving wheel in combination with the adjustable pinion, as set forth.

UNION PLATFORM SCALES—Augustus Sanborn (assignor to E. & T. Fairbanks & Co.,) of St. Johnsbury, Vt.; I do not claim connecting the platform with the beam and steelyard by means of a rod depending from the latter, and applied both to the lever and steelyard by knife edge bearings or loops, as this is a common method of connecting such parts in ordinary platform scales, but as my invention has reference only to, or is an improvement on what is termed the "Union Scale," or that having a pan or platform, as specified

What I claim consists in the manner in which the platform lever, B, and the vertical suspension rod, b, of the pan and steelyard are connected and supported, the rod, b, being jointed at its lower end to an arm, I, independent of the lever, B, and said lever connected to the rod, b, by means of a pendulous rod, h, and a pointed or knife edge bearing, g, arranged near the upper part of the rod, b, as specified, the same, while securing a vertical movement to the rod, b, the only one which it should have, effecting the advantage of allowing the lateral vibrations of the lever, B, to take place without disturbance of the steelyard or rod, b, as set forth.

FURNACES FOR TREATING ZINC ORES—S. T. Jones, of New York City: I claim the double use of the chimney, substantially as specified, by combining the said chimney governed by a damper or register, with the furnace and collecting apparatus, and interposed between the two, substantially as specified, whereby the iron contained in the ore can be worked, after the zinc has been worked and collected as set forth.

FEEDING PAPER TO PRINTING PRESSES—Andrew Campbell, of Newark, N. J.: I do not wish to be understood as making claim to the method of lifting sheets of paper from a pile by means of an exhaust bar or surface acting on the principle of suction, as I am aware that this was first done many years ago by M. Remond, in Europe, in a machine for making envelopes.

But I claim, first, the mode of operation, substantially as described, by which the pile or piles of sheets is or are moved up or down and kept in position as the sheets are taken from or laid on the pile, that the upper sheet of the pile may at all times be in the proper position to be acted upon by the mechanism which removes it or which deposits it, which mode of operation consists in lifting or depressing the table or tables on which the pile is placed by the mechanism described, or the equivalent thereof, in combination with the gauge and holding bar, or any equivalent therefor, which rests on the top sheet to hold it down, and which, by its position on the pile and its connection, governs and controls the movements of the lifting or depressing mechanism, substantially as described, the said modes of operation being employed to govern the position of the pile on the feeding and receiving tables, or either, as set forth.

Second, the mode of operation for holding the upper sheet of the pile on the receiving table on which the sheets are in succession deposited, so that as the sheets are drawn over the pile in succession, the sheet previously deposited shall not be moved from the position in which it was deposited, the said mode of operation consisting in the use of a wing or plate which rests on the upper edge of the pile at that end of it over which the sheets move as they are drawn over the pile, and which then rises to permit the newly deposited sheet to fall, and again descend to hold it preparatory to the introduction of another sheet, the said wing or plate being operated in the manner substantially as described, or any equivalent therefor. And this I claim whether the said wing or plate be employed for the sole purpose of holding the upper sheet of the pile on the receiving table, or for this and for the purpose of gauging and controlling the mechanism which depresses the receiving table.

Third, making pressure on the surface of the pile of sheets on the feeding table, and within a short distance of the edge which is to be lifted, for the purpose of forcing the sheets at that end of the pile to open, fan-like, that the separation may be more effectually made, substantially as described. And this I claim, whether the required pressure be made by the rounded surface on the exhaust bar, or by a separate bar having the like mode of operation.

Fourth, making the surface of the exhaust bar concave, substantially as described, so that the upper sheet which is to be removed from the pile shall be drawn into the said concavity, and thereby draw its edge within the edge of the pile, the more effectually to insure the separation, as set forth.

Fifth, placing the concave surface of the exhaust bar, so that it shall overlap or extend beyond the edge of the pile, substantially as described, that the whole of that portion of the sheet which is to be acted upon by the exhaust, may be within the concavity of the exhaust bar, thus causing the inward current to pass upwards under the projecting concave surface of the exhaust bar, and across the edges of the pile to insure the separation of the edges of the sheets, as described.

Sixth, blowing in a current of air at one or both ends of the concavity of the exhaust bar substantially as described, to insure the separation of the top sheet from the rest of the pile preparatory to removing it from the pile, as set forth.

Seventh, the employment of the transferring or holding bar, connected with the exhaust and blowing bellows, or equivalents therefor, substantially as described in combination with the exhaust bar, substantially as described, by means of which the end of the top sheet, which has been separated from the pile, is transferred from the exhaust bar to, and held by the said transfer bar until it is taken by the gripers, or any equivalent therefor, that the exhaust bar may be removed preparatory to carrying off the top sheet, as set forth.

Eighth, the methods of thumbing the edge of the pile, to insure the separation of the edges of the sheets where they are liable to adhere, by means of the rotating spring flippers, substantially as described, or any equivalents therefor.

Ninth, the mode of operation, substantially as described, by which the griping ends of the jaws which gripe the sheet of paper, are made to maintain a fixed position, relatively to the edge of the sheet held by the transferring and holding bar during the entire operation of griping the sheet, and during a portion of the operation of reversing the jaws by the continued motion of the endless chain or band with which the rear part of the jaws are connected, as set forth.

Tenth, removing the sheets in succession from the pile by griping one end of each sheet in succession with griping jaws, after the end has been separated, and lifted from the pile by other means, and rolling it off the pile by the motion of the griping jaws towards the other end of the pile, substantially as specified, by which all tendency to disturb the sheets below, is avoided, as set forth.

I do not claim, broadly, the fact of rolling off the sheet from one end of the pile towards the other, but limit my claim to the mode of operation specified by which I attain this end in a practical and efficient manner.

Eleven, making friction on both surfaces of the sheet when brought over the pile on the receiving table, substantially as described, in combination with the gripers, so that the moment it is liberated by the jaws, the friction on both surfaces shall hold and leave it in place on the pile, substantially as described, whereby the accurate deposit of the successive sheets is made to depend solely on the period of opening the jaws, as set forth.

Twelfth, making pressure on and packing the pile of sheets on the receiving table, as each sheet in succession is deposited, by means of a perforated plate, substantially as specified, the perforations in the plate giving free access to air, that the plate may be lifted without drawing up the sheets with it, as set forth.

I am aware that pressure has been made on the top sheet of a pile in the operation of depositing the sheets by means of bars called a fly, and therefore I do not claim broadly making pressure on the pile, except by means of a perforated plate extending over the entire pile to pack down the entire surface, as specified, the small perforations preventing the sheet from being lifted, whilst they do not prevent the packing down of the pile.

And finally, the employment of pointed punches to punch holes in the sheets as they are piled on the receiving table, substantially as described, so that the pile may be transferred and moved without shifting the position of the sheets relatively to each other in the pile, as set forth.

CANDLE MOLD APPARATUS—William Humiston, of Troy, N. Y.: I am fully aware that pistons have been used in connection with candle molds, for the purpose of forcing out the molded candles. This I do not claim.

But I claim making the top of the piston in which the tip of the candle rests, movable on the piston, so that it may remain in contact with the candle, whilst the piston is slightly depressed or lowered, so to bring it up with a sudden blow, to start the candles from the molds, substantially as set forth.

I also claim, in contradistinction from clamping the wicks, or from a tip bar or supporter, the clamping of the candles themselves, in the position in which they are forced from the molds, and thus holding them until ready to be removed, by which means I retain greater facilities for pouring into or filling the molds, and avoid the danger of breaking the candles or their tips, substantially as described.

PRINTING PRESS—Merwin Davis, of New York City: I claim, first, the oscillating bed, having a plane surface, and operating substantially as described, and contradistinguished from a rotating bed, or sliding bed, by oscillating between two given points.

I also claim the construction and operation of the platen, in combination with said bed, as specified.

I also claim the adaption and combination of the well-known fly, n, for laying the sheets, the slide, b, for the reception and the delivery of the paper, and the inking apparatus, b3, e e, and f, to the new construction and arrangement of the bed, b2, and platen, d, substantially as described.

PROPELLERS—Augustin Duboce, of Brooklyn, N. Y.: I claim giving the blades the motions specified, in connecting them with the sides of the vessel by means of a ball and socket joint, or any equivalent therefor, in combination with an arm projecting from the arbor of the blade, the end of which arm is connected by a sliding and ball and socket joint, or any equivalent therefor, with a wheel or crank arm on the crank or driving shaft, substantially as and for the purpose specified.

DOUBLE RECIPROCATING SPLIT-PISTON RODS FOR PUMPS, ETC.—John A. Burnap, of Albany, N. Y.: I claim in reciprocating rod gear of valves or pistons, operating essentially as and for the purposes set forth, the double reciprocating split rod gear, s s', when arranged and operating longitudinally side by side, as described, with the inner faces of the rods bearing against and acting as long moving guides and supports to each other, to strengthen them and prevent lateral shake or play, while their exterior is bound and tightened by the one packing box, and the two rods or split portions, s s', with their respective valves or pistons, are free to move separately, or in opposite directions to each other, for the admission, discharge, or cutting off of the gas or fluid, or for operation by the gas or fluid, as specified.

WINDOW BLINDS—Frank Chase, of South Sutton, N. H.: I claim constructing blinds by nailing or securing oblique or diagonal slats to both sides of a frame, the slats on one side of the frame being opposite to, or covering the spaces between the slats on the opposite side, as shown and described.

[This patent illustrates or rather corroborates a remark that we have often had occasion to make, to wit:—the simplicity of an invention is no bar to its patentability. Window blinds made on this plan will be strong, cheap, and effective. The nature of the improvement is fully set forth in the claim.]

TURNING CYLINDERS OF WOOD, &C.—Matthew F. Connet, of Plainfield, N. J.: I do not claim the revolving of the cutters at a rapid and the block at a slow motion, as this has been done before.

But I claim so combining a swing frame, which carries the block to be cut, with a cutter or cutters revolving around a fixed center, as that the block may be swung up to the cutters and first cut to the required depth or gauge without revolving, and then be revolved slowly on its center against the action of the cutters, to complete the turning or cutting at a single revolution of the block, substantially as described.

[The rapidity with which this machine operates, and the excellent finish it gives to its work is surprising. A rough block of wood is centered, and makes only one revolution when it is transformed into a perfect, beautifully turned carriage hub. The various parts of the machine are simple, convenient, and substantial. The expense of construction is small. The operation of the improvement is set forth in the claims as clearly as it can be without drawings. This is a very valuable and useful invention.]

PAGING MACHINES—F. O. Decener, of New York City: I lay no claim to producing combinations by means of movable figures, in whatever position they may be placed.

But, first, I claim the guide flange or guide flanges, in combination with the pawls, stop finger, or stop fingers, and ratchet, for the purpose as described.

Second, I claim the cam or cam shaped piece, E, in combination with a rotating, reciprocating, or vibrating arm, Q, and pawls, f, for the purpose of operating movable series of figures, so as to produce different combinations, and giving to them by means of the cam, E, the requisite motion and time of rest when the machine is in operation.

Third, I claim the combination of the inking table being surrounded by the figures or characters to be printed.

Fourth, I claim the combination of the inking table and spring for the purpose described.

Fifth, I claim the combination of the spring hinge or joint with the roller arm for the purpose described.

Sixth, I claim the mode of adjustment by raising or lowering the machine in the manner and for the purpose described.

EXHAUSTING AND SEALING VESSELS—W. H. Elliott, of Plattsburgh, N. Y.: I claim the yielding lining, of mouth, b, the chamber, a, with its elastic movable portion, e e, and the lever, d, with or without the liquid used for expelling the air from the chamber, a, or their equivalents, when used in combination, operating in any manner essentially the same as herein described, and for the purposes set forth.

SIZING HAT BODIES—Phineas Emmons, of New York City: I claim the water box having the partition or graduated pressure board therein, in combination with the vertical lock rod having a ribbed or corrugated face and self adjusting weighted levers, the same being made and combined substantially as set forth.

SAWING MACHINES—Benjamin Fulgham, of Richmond, Ind.: I do not claim the arrangement of swinging frames shown for giving a horizontal reciprocating motion to the saw frame, G, for that has been previously invented, and was formerly patented by me.

But I claim, first, Placing the reciprocating saw frame, G, provided with a vertical circular saw, H, and a horizontal circular saw, J, within a frame, G', and placing or centering the log, Y, to be sawed between shafts, X X'. The frame, G', being lowered at every stroke or vibration of the saw frame, G, and the log, Y, turning simultaneously therewith, a gradually increasing distance at every stroke or vibration of the saw frame, G, for the purpose of cutting the stuff an equal thickness direct from the log, and in a spiral manner, substantially as shown and described.

Second, I claim operating the log, Y, and frame, G', by means of the bar, S, attached to the wheel, K', as shown, said bar being attached to the arm, L', which is secured to the lever, M', when said lever, M', is passed through a slotted plate, N', to the frame, G', attached for the purpose of gradually increasing the feed motion of the log, and causing the stuff to be sawed of an equal thickness, as described.

[The above invention consists of an ingenious arrangement of circular saws, whereby the rough log, after having once been placed between the centers, is entirely cut up into beams and joist, at one operation. Such improvements are of great value, particularly in the West and other timbered sections of the country. Mr. Fulghum's machine is one of the best for the purpose with which we are acquainted. It is not very expensive in construction. It is easily managed, and its work is done in the best manner. Address the patentee for further information.]

BRIDLE REINS—Kington Goddard, of Philadelphia, Pa.: I claim the arrangment of the reins, substantially as described, by making the snaffle rein tubular in part to receive the curb rein, substantially as, and for the purpose set forth.

BORING AND MORTISING HUBS—C. H. Guard, of Brownsville, N. Y. (assignor to himself and John A. Scroggs, of New Castle, Pa.): I claim the arrangement of the levers, p p, and the segments, o o, and n n, with the right and left screws, g', and h', on the periphery of the bit holders, m m, in such a manner that a proper position of the said levers and segments will cause the rotary motion of the said holders to move them longitudinally either inwards or outwards, and which position may be instantly reversed at the pleasure of the person operating the machine, substantially as set forth.

I also claim arranging the rack bars, a c, and the upper and lower chisels, g h, in such a manner that the said chisels can be made to simultaneously strike upon opposite sides of the hub placed between them, substantially in the manner and for the purpose set forth.

I also claim arranging the rack bars, a c, the supporting and guiding bars, H H, and the regulating screw, c, with each other, in such a manner that the chisels g h, may be made to act in corresponding vertical or oblique directions in forming mortises substantially in the manner and for the purpose set forth.

HAND STAMP—Joseph Harris, Jr., and Elbridge Harris, of Boston, Mass.: We claim the peculiar oscillating motion of the stamp, also the same in combination with the inking roll and its adjusters, for the purpose described.

MACHINERY FOR MAKING ROPE—John Harris, of North Hoosick, N. Y.: I claim, first, the described method of driving the flyers by means of the cone pulleys, h h, and the band or ring, F, either, the said band or ring or the bearings, b b, of the flyers having springs applied to keep the pulleys and band properly in contact with each other at all times, and the band or ring being movable in the direction of the axes of the flyers, to come in contact with a larger or smaller part of the cone pulleys, and thus vary the speed of the flyers, and the twist of the strands, while the machine is in operation.

Second, making the cans, H H, of polygonal form to fit snugly between the pillars or side pieces, e e, of the flyers, in combination with the springing collar, I, applied to fit over the top of the can, whereby the cans are enabled to be quickly taken from the flyers and replaced.

[This invention successfully accomplishes what has long been needed in all kinds of rope and cord machinery, viz;: a convenient and effective means of changing and regulating the degree of tightness in the twist of the strands. The ingenious devices by which this important operation is executed, are clearly set forth in the first claim. The other claims relate to further improvements, whereby the cans which hold the yarn or thread, may be very rapidly changed. There is also a new method of stretching the rope as fast as it is made. This patent is one of the most important issued under the present date. We regard it as a very valuable invention. Mr. Harris, we believe, is the patentee of other highly profitable improvements in this class of discovery.]

CUTTING FILES—Horace Hotchkiss, of Waterbury, Conn. I claim supporting the file blank upon a compound carriage, having both a rotary and lateral adjustment horizontally, while the cutter is adjusted only in a plane passing through the apex of the cutter and bisecting its edge, and is at the same time perpendicular to the edge of the cutter, and to the plane of the file carriage.

I also claim placing the cutter in line with the hammer, and in the same adjustable frame therewith, so that when the position of the cutter is changed by an adjustment of this frame, the hammer shall also be adjusted by the same operation to conform to the position of the cutters.

CARRIAGES—M. G. Hubbard, of New York City: I claim the cross bar for attaching the forward axle to the other parts of the running gear, and bar for the king bolt, combined and arranged substantially in the manner and for the purpose set forth.

STALLS FOR HORSES, &C.—John Jenne, of Bethany, N. Y.: I claim in stables or stalls for horses or other animals, the swinging partitions, S S, constructed and arranged substantially as described, for the purposes set forth.

Second, I claim the doors, D D, in combination with the planks, A A, so constructed and arranged as to operate substantially as described.

Third, I claim the sleeves, R R, in combination with the chains, C C, to prevent the animal from injuring himself by rubbing against the chains.

MAKING RAILWAY CHAIRS—James Kelren, of Canton, Mass. (assignor to himself and George Banks, of East Boston, Mass.): I do not claim the combination of bending dies, a bed and former.

But I claim combining with each of the punches and its driver, a lifter and mechanism for operating such lifter, as a pecified, such punch being applied to the bending die, and supported on a spring, as explained.

PARLOR STOVES—Francis Kenney, of Springfield, Mass.: I claim the arrangement of the pipes, M, tubes, N, chamber, H, and pipe, I, when provided with the dampers, u u q r, specially as shown and set forth.

[The nature of this invention consists, first, in a peculiar arrangement of the fire grate, whereby the same may be agitated so as either to sift the ashes from the fire chamber, or empty down its contents—both in a convenient manner. Second, in the employment of an ash drawer or sifter placed above the ash pit, and so arranged that it may be moved back and forth to sift the ashes from the cinders without the escape of dust into the apartment. Third, in an arrangement of flues and air heating chambers, so that by means of metallic pipes the heated air may be conveyed to several apartments simultaneously. Stoves made under this patent are as good or better than many of the hot air furnaces now in use, while their original cost and consumption of fuel is far less than the furnaces.]

MAKING GUTTA PERCHA BOATS—E. B. Larchar, of Baltimore, Md.: I disclaim any particular form of boat, air chamber, or bulkhead, or any cylindrical or other supporters on gunwales; or to the mere making of gutta percha vessels.

I claim the method of making a safety boat or other vessel of gutta percha mixed with glue, so that the air chambers or other parts, if separately formed, may, together with the boat body, be united and completed at one pressure; or, that if the braces, knees, thwarts, supporters, or other accessories to the boat proper, are solid, the whole with the inner and out forms may be all made or completed together at one time, and at one pressure, substantially in the manner described.

PROCESSES FOR SMELTING IRON—Samuel Macferran, of Philadelphia Pa.: I claim the use of gas carbon as a fuel in the process of smelting iron, as set forth.

PROCESSES FOR HULLING COTTON SEED—D. W. Messer, of Boston, Mass.: I do not claim submitting cotton to pressure by passing it between rollers or otherwise, for the purpose of extracting the oil therefrom. Neither do I claim subjecting the seed to the action of steam to facilitate the expression of the oil. Nor do I claim any method of extracting or expressing oil from cotton or other seeds.

But I claim separating the kernel from its shell and fiber, previous to expressing the oil, by the method described, or by any other method substantially equivalent, the seed being macerated to soften the shell, and then submitted to pressure, for the purpose of pressing out the kernel, in the manner and for the purpose substantially as set forth.

ADMINISTERING PULVERULENT MEDICINES—James Moore and D. P. Adams, of Marietta, Ohio: We claim the combination of the machinery described for turning the emery wheel with a discharge pipe, L, for the purpose of administering pulverulent substances, in cases of inflammation of the mouth and throat.

BALANCE WATER GATE—E. N. Moore, of Lenox, Pa., & I. B. Runyan, of Chester, N. Y.: We claim constructing a water gate by having two disks or plates, C C, of proper form, attached to opposite ends of a shaft, B, which passes transversely through a box, A, said disks bearing against the projections, a a, on the sides of the box, and over openings, D, in the sides of said box, substantially as shown and described.

[The egress of the water from the mill is through a suitable box, furnished on two of its sides with round disk valves. Both valves are attached to and operated by a common shaft, which passes through and across the box. If only one valve were used, the pressure of water against it would render its opening or closing more or less difficult. By employing two valves on the same shaft, the pressure against one disk is counterbalanced by an equal weight against the other, so that both are opened and closed with the utmost ease. Millers will at once perceive that gates thus arranged will be very sensitive to the action of a governor, and will enable them to control the volume of water consumed on the wheel with the utmost nicety and regularity. This is a good invention.]

WATER METER—H. R. Worthington, of Brooklyn, N. Y.: I claim the employment of two cylinders, which may be distinguished as cylinders Nos. 1 and 2, with pistons working in the same, so arranged and combined with regard to each other, as that the motion of the piston in cylinder No 1 shall actuate the supply and delivery valves of cylinder No. 2, while in like manner the motion of the piston in cylinder

No. 2, actuates the supply and delivery valve of cylinder No 1, thus producidg a positive and direct motion, as set forth.

HINGES—Joseph Plegar, of Birmingham, Pa.: I claim making a bolt on the pin part of the hinge, and a cup or socket on the upper section of the hinge to receive the bolt, as set forth.

SHUTTLE GUIDES FOR LOOMS—H T. Robbins, of Lowell, Mass.: I do not now claim the shuttle guide, A, as that was secured to me by patent granted Sept. 14, 1852.

But I now claim an improvement on said former invention, which consists in furnishing the shuttle guides with pulleys, B B, or equivalents, substantially in the manner and for the purpose described.

WAGONS—J. T. Russel, of Tyler Co., Va.: I claim the construction of the standard receiver described, and the application thereof to wagon bolsters.

HYDRODYNAMIC FRICTION JOINTS—T. E. Sandgren, of Wilmington, Del.: I claim forming a hydraulic bearing for a rotating shaft by means of the water ducts passing through the cylinder or case, in which the shaft rotates, for the purpose of supplying water as a lubricator to the rubbing surfaces, in the manner and for the purpose set forth.

CHEESE PRESSES—G. R. Comstock, of Manheim, N. Y.: I am aware that rollers, to aid the outward movement of the platform have been used, but requiring separate adjustments to bring them into action. Such therefore I do not claim.

But I claim the roller, R, in the lower portion of the pressing gate, and brought into action by the rising of said gate in the removal of the pressure, substantially as and for the purposes specified.

BOTTLE FASTENINGS—John Allender, of New London, Ct.: I claim the strap, E, constructed with hinge and hook for holding-in, and releasing the corks or stoppies of bottles, jugs, etc., substantially as set forth.

WROUGHT IRON SHAFTS—James Montgomery, of Baltimore, Md.: I claim the construction of a hollow compound shaft, by means of the bars and wedges, arranged and welded together only at the journals or bearings, as described, while the bars are separated by sufficient spaces at all other parts, in the manner and for the purposes substantially as described.

STARCH MAKING—Henry Colgate, of Jersey City, N. J.: I claim the process of manufacturing starch by adding to it in the process of making, a certain amount of sugar, in the manner and for the purpose set forth.

CALENDAR CLOCKS—John Williams, of Hartford, Ct.: I claim completing the revolution of the wheel, B, at the end of the shorter months by means of sliding teeth which are suitably attached to the said wheel, and severally or collectively, as required, brought into such positions as to enable them to be acted upon by the teeth on the daily revolving wheel, A, by means of the "four year wheel," D, which is on the same arbor as, but independent of the wheel, B, the said wheel, D, acting upon the said sliding teeth by means of its forty-eight projecting and receding divisions, and by pins or teeth arranged upon it, as described, and being for that purpose moved one-forty eighth part of a revolution, independently of the wheel, B, for every revolution of the said wheel, B, substantially as set forth.

But I do not claim the method of giving motion to the wheel, D, as that has been before employed for a similar purpose.

[Calender clocks exhibit the days of the week, and the date of the month, as well as hours and minutes; they are by no means as much in use as we should think they would be. Mr. Williams is certainly doing his share towards their simplification, and consequent introduction to popular favor. We believe this is his second patent. The present invention relates chiefly to the motion of the four year wheel, and tends to simplify and cheapen the whole mechanism. In this species of time piece some of the wheels require to have curious movements. One of them occupies four years in making a single rotation, a portion of its duty being to look out for leap year. The inventor of these improvements has no superior in this country in his profession. The above patent is one of value.]

DRESSING LUMBER FROM THE LOG—Albert Walcott, of Detroit, Mich.: In the process and combinations which I have described, and fully set forth, there are several parts which are common and used by others, which I do not claim separately or in other combinations.

I do not claim sawing lumber into cants or planks, the carriage, or any particular construction of carriage. The cylindrical cutters, or any particular construction of cutters, or planes for surfacing, or for tonguesing, grooving, matching, rabbeting, beading, or molding. Neither do I claim the circular saw, as they have all been used before in other various modifications.

I do not limit myself to any precise form or arrangement of parts, nor to any particular device for moving or operating them, for these may be varied to an almost unlimited extent, without changing the principles of my invention, as set forth.

I do not limit myself to the rotary cylindrical cutters for surfacing, as cutters in the face of a wheel may be used, or even stationary knife stocks used for surfacing.

Neither do I limit myself to the use of the circular saw for sawing off stuff, as a reciprocating saw may be used, and many other similar variations may be made by any competent or skillful machinist, without essential or substantial variation from the character of my invention, as set forth.

I claim the particular arrangement and combination of mechanism for manufacturing and dressing out lumber from the log, cant, or plank, as the case may be, by successive operations, and in any manner substantially the same, as set forth and described, not confining myself, however, to any particular arrangement of mere mechanical details or devices to effect the desired result, that is, a piece of lumber finished or partially so, as the case may be, for building and other purposes.

DRESSING AND CARVING STONE—E. A. Swan, of Brooklyn, N. Y., and De Witt C. Smiley, of New York City: We are well aware that spiral cutters have been used for shearing cloth and similar purposes, and also that cutters for planing machines have been fitted spirally, or on an incline, and also that picks for stone dressing machines have been arranged around a cylinder in rows that are not parallel to the shaft, but inclined thereto, therefore we make no claim to any of these devices.

But we are not aware that cutting tools for dressing stone have ever before been formed as a gradual or constant twist or incline, so that the point of the cutting edges is parallel to the axis of motion of said cutter, thereby the cut on the stone or similar rigid substances is a shearing cut at all times, and no blow is given by said cutter on the stone, and all vibration of the machine is consequently prevented, and the cut partakes more of the character of a continuous boring operation, that both preserves the cutters and machines at the same time the best character of work is cut, and that on every thin stone that would be broken to pieces if the cutter acted with any blow.

And we are also aware that the cutting tools of various characters of machines have been directed in their motion by patterns and screws, but we are not aware that a drawing moved with the bed, and so fitted that the cutting tool is regulated by keeping a tracing point over said drawing, has ever before been used, whereby the most delicate work can be cut to a drawing without the expense of a pattern, the motion given to said cutter being from the combined operation of the cross slide rest acting with the main bed to produce any desired shape of cut according to the drawing the machine is made to follow.

First, we claim the method described and shown, of dressing, carving, or cutting stone, or similar rigid and unyielding substances, by the use of a rotating cutter whose cutting edge is spiral or at an incline with the axis of said rotating cutter, thereby the cutting edge always operates obliquely on the material under treatment, and effectually prevents any blow on the stone that would produce a vibration of the machine, or break the cutter or stone, for the purposes as specified.

Second, we claim the method described, of fitting a horizontal or inclined rotating cutter, so that it can be kept radially with any curved mold or cut, it may be forming, viz., by the use of the yoke, 3, and parts attached, substantially as specified.

RE-ISSUE.

LOOMS FOR WEAVING FIGURED FABRICS—Richard Garsed, of Frankford, Pa. Patented originally Nov. 6, 1849: It will be obvious to any practical weaver, that I can modify this device in various modes without altering the nature of the invention; for example, by moving the zig-zag, S, endwise upon the shaft, I can make the desired changes of the pattern, instead of turning it upon its axis by means of the spring, t, pins can be inserted in any of the holes in the cylinder if a great variety of patterns is wanted, but I prefer not to employ them generally, they are however a well-known device, and I do not claim them.

I claim, first, operating the heddle frames by the action of a cylinder having two or more patterns interchangeable at pleasure, in the manner, and for the purpose substantially as set forth.

Second, the employment of two or more patterns simultaneously in the same loom interchangeable at pleasure, operating in the manner and for the purpose described.

I also claim the apparatus for turning the cylinder, substantially as specified, whereby it can be moved through a greater or less space as may be required.

Scientific Notes and Queries.

ROTARY ENGINE BOATS—The London *Artizan* describes a small iron steamer fitted by Messrs. Rennie with disk or rotary engines, for the present Pacha of Egypt, which has been tried on the Nile, and has done remarkably well. The length of the boat is 60 feet, width 6 feet, draft 22 inches. She has two disk engines, 13 inches in diameter, two screw propellers (one on each stern quarter) of two feet diameter. With a pressure of 60 lbs. steam on the square inch, the Pacha had run this boat on the Nile at the rate of 12 knots per hour, and had beaten the best paddle boats between Alexandria and Cairo, a distance of 200 miles. Messrs. Rennie have built another boat of the same character for a passage boat on the canal near Madras, which has been tried and found to exceed all expectations. From the accounts of such boats, as given by the *Artizan*, we are of opinion that Barrow's rotary engine has performed as well, if not better. So far as we can recollect, we think that the plan of Messrs. Rennie, in fitting a screw to each engine, is new, and may be a more advantageous application of the screw than the common mode of having one large propeller directly in the center of the stern.

MONSTER GUNS—Wrought-iron guns of monster size and caliber are in course of manufacture at the iron works of Messrs. Nasmyth, near Manchester. They will be upwards of three feet in diameter, and about twelve feet long, weighing upwards of twenty tuns each, and will discharge a shell of 1,000 lbs. weight a distance of five miles. The *Artizan* states that it does not expect very brilliant results from these guns, on account of a defective mode of mounting them, no allowance being made for horizontal recoil in the manner they are slung.

DIAMOND REEF—This sunken reef, so detrimental to the navigation of New York harbor, is about to be removed. The city has made a contract with Messrs. Husted and Kroel to remove it for $35,600. The general government ought to have done this long ago.

MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE—This Association will hold its ninth meeting at Providence, R. I., on the 15th of this month. The Local Committee have made arrangements by which members of the Association will receive return tickets free, on the following lines of conveyance, viz.: Boston and Providence Railroad; Providence and Worcester Railroad; Hartford, Providence, and Fishkill Railroad; route from New York to Providence via Stonington; Philadelphia, Wilmington, and Baltimore Railroad.

PAPIER-MACHE HUTS—A papier-mache manufacturer in England has submitted to the authorities a model hut of that material, intended for camp use. The papier mache pulp is mixed with rags, the result of which is a paper plank much stronger than wood, all but inflammable, a non-conductor of heat or cold, and impenetrable by wet.

VULCANIZED GUTTA PERCHA—The following statement of experiments made upon gutta percha vestments at the United States naval laboratory, will give additional value to preparations of that gum:—"Six pea jackets, made of gutta percha fabric, were baled in the same manner as the cloth clothing for the navy, under a pressure of thirty tuns.—They were then placed over a steam boiler in the yard, and remained for sixteen days subject to an average temperature of 190°, at times as high as 212°. On examination, the garments were found in the same state as when packed. There was no adhesion of the folds, nor any decomposition of the gutta percha. One jacket was dipped in water, rolled up and sewed in the corners (but not pressed,) and subjected to the same heat for three days. On examination this also was found uninjured.

MORE ABOUT CHARCOAL AS A DEODORIZER; USEFUL NEWS FOR FARMERS—The lecture of Dr. Stenhouse, F. R. S., on the uses of charcoal for sanitary purposes, has just been published in London. It has for centuries been known that charcoal had the power of absorbing noxious gases; but Saussure was the first who made any important experiments on the absorption of gases by charcoal, and he confined himself to the use of that made from box-wood. The following table exhibits the number of volumes of gas absorbed by a single volume of charcoal:—

Ammonia	90
Hydrochloric acid	85
Sulphurous acid	65
Sulphuretted hydrogen	55
Nitrous oxyd	40
Carbonic acid	35
Bicarburetted hydrogen	35
Carbonic oxyd	94
Oxygen	92
Nitrogen	75
Carburetted hydrogen	5
Hydrogen	17

This absorption, which is complete in twenty-four hours, has nothing chemical in its action, but is based on capillary attraction, just as liquids rise in very small tubes by the attraction of their sides.

Dr. Stenhouse was led to extend these researches by operating on ordinary wood charcoal, peat charcoal, and animal charcoal.

Animal charcoal is decidedly inferior to both wood and peat charcoal as an absorbent, but as a decolorizer it is immensely superior to both. The putrefaction of animal and vegetable substances is in general a process of imperfect oxydation, forming and giving out a variety of complex secondary products possessing disagreeable odors, and acting injuriously on the animal economy. In all the modern systems of chemistry, charcoal is described as possessing antiseptic properties, and retarding putrefaction, while the reverse is the case, and that it hastens the decay of putrefying substances with which it comes in contact. This error has arisen from the fact that charcoal masks or conceals its operations, by absorbing and oxydizing the gaseous products evolved. This property of charcoal arises from its extreme porosity. Liebig estimates the pores in a cubic inch to be equal to at least 100 square feet of surface; and many have computed it at more than double that amount.

As charcoal is a powerful oxydizer, it is manifestly wrong to incorporate it with manure until it is immediately to be put in the ground, for no sooner is the charcoal and manure in contact than a species of low combustion ensues, and the manure becomes greatly deteriorated. It may be applied in numerous instances to sanitary purposes; respirators for ordinary wear, and for workmen in deleterious manufactures; ventilators for crowded buildings, which have already been applied with complete success at the justice-rooms in the Mansion House and Guildhall; for ships; screens for the gully holes of sewers; dissecting rooms and wards of hospitals; and in a variety of other situations, where a screen made of two sheets of perforated metal, filled in between with pieces of charcoal, from the size of a pea to that of a bean, would form a most efficient air filterer, and supply a pure and health-breathing atmosphere.

Electricity.

It appears to us that we must be on the verge of some new and great discoveries in electricity. The applications of galvanic electricity, since it was first discovered, are of the most varied and wonderful character. By it the telegraph operater can, with his iron pen, write a letter three thousand miles distant. By it the electrotypist coats the most common metals with silver and gold; by it metals are extracted from aqueous solutions, and even from the human system. It is employed to plate medallions, busts, jewelry, and even the very type which prints the words we write. It can produce the most intense and brilliant of artificial lights, and in its blaze the diamond and the hardest of metals become as wax. Possessing such varied powers, it has often been attempted to substitute it for steam and other motive agents, but hitherto without success. Not that it cannot move machinery—for it is a mechanic as well as a chemist—but because it has not been able to compete with steam in an economical point of view. That it ever will be able to do so, we dare not say no, in this age of invention, but it has many difficulties to overcome before it can. The account, however, published in the last number of the SCIENTIFIC AMERICAN, of Faraday's lecture, and the opinion he gave respecting the field for electrical investigations still spread out before the student and inventor, leads us to conclude that some new and great discoveries will soon be made in electrical science.

Government Steamers.

The steam frigates *Mississippi* and *San Jacinto*, are now undergoing repairs at the Brooklyn Navy Yard. The new steam frigate *Niagara* is being built by George Steers (by contract) at the same Yard. The well-known reputation of the constructor has raised the highest expectations respecting this, the greatest work he has yet undertaken. Her length will be 345 feet, and breadth of beam 55. When finished she will be one of the largest war steamers—the longest at least—afloat. It is reported—but perhaps without authority—that Mr. Steers has asserted that she will be able to make 17 knots per hour with sails alone.

She will be built in a very superior manner, no doubt, and be a great improvement over government work. It is creditable to the Secretary of the Navy, that this contract was given to a nautical architect of the merchantile marine, just to test the difference between naval science and that practiced by the nautical architects in the civil service.

Street Sweeping Mechines.

The Street Sweeping Machines, which have been employed for some months so successfully in this city, we are afraid, will be laid upon the shelf on account of opposition to them by some of those in authority. We regret this, because we really desire to see these machines fully and fairly tested, in order to contrast their economy with that of hand labor. The streets of New York have always been distinguished for their filthiness, and we had hoped that the sweeping of them by machinery would be the means of rendering them more cleanly. We hope that contracts will yet be made with the owners of them.

Revolution in the Whaling Business.

There are indications that the seat of the whaling interest is about to be transferred from the Atlantic to the Pacific coast. Arrangements are already in progress with several houses to transfer their business from New Bedford and other places, to some point on the Pacific coast. San Francisco, Benicia, Oakland, and Monterey are spoken of. Orders have been given to captains of vessels now employed in the whale fisheries in the North Pacific to recruit at the ports of California.

New Mode of Vaccination.

The Dublin *Medical Press* says, "without punctures, three regular vaccine postules appeared on the fourth day, and were produced by merely placing some vaccine matter on the arms of two children, and rubbing the spot with the sharp end of an ivory knife. The fact that young girls take the cow pox on their fingers when milking, suggested this method of vaccination."

The Steam Fire Engine.

At a fire which took place in New Orleans, on the 19th ult., the Steam Fire Engine *Young America* did wonders. It forced four powerful streams of water against the building (Verandah Hotel) and kept them up with great steadiness for 10 hours. The firemen of the hand machines stood by and threw up their caps for steam.

New Inventions.

Improvement in Water Wheels.

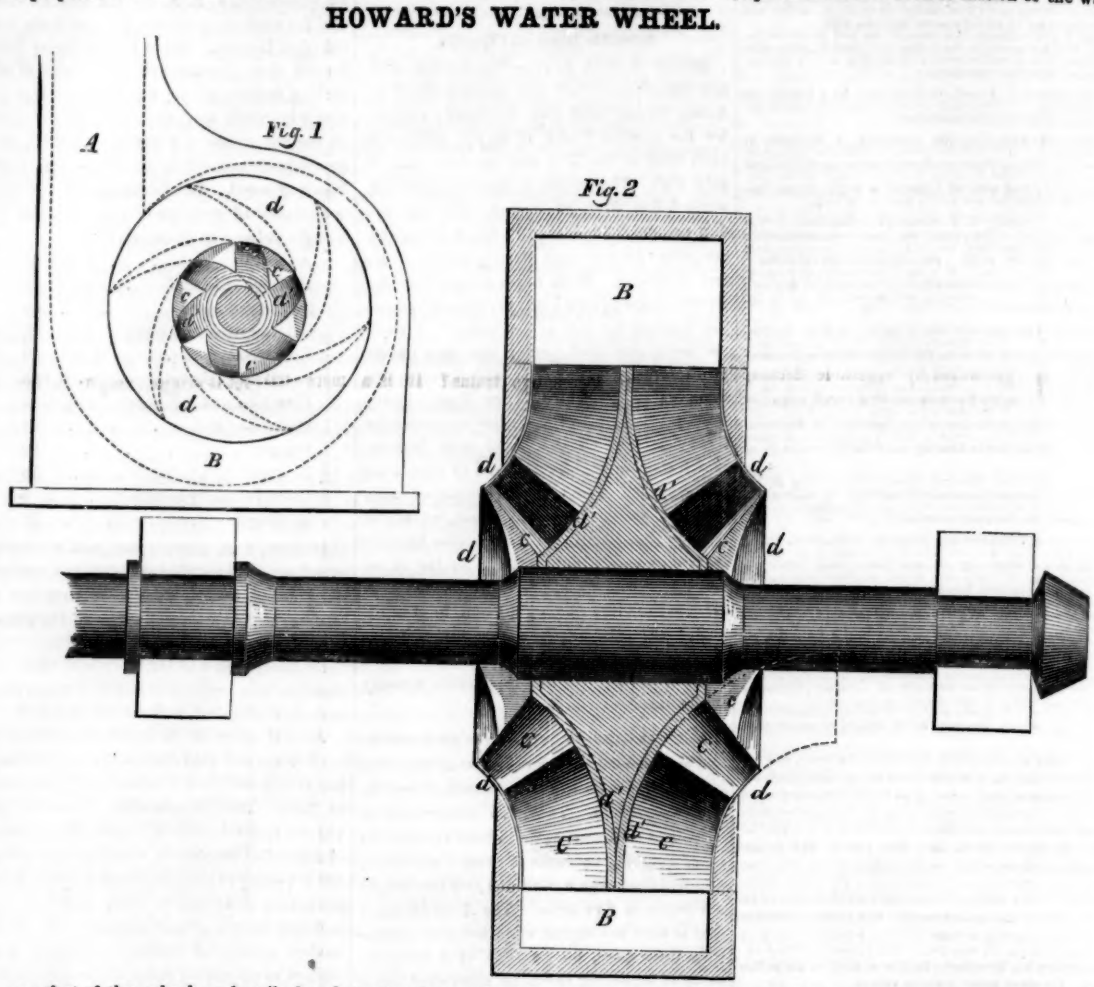
The accompanying figures represent the water wheel of Dean S. Howard, of Lyonsdale, Lewis County, N. Y., for which a patent was granted on the 29th of May last.

Fig. 1 is a side elevation of the wheel scroll and flume, and fig. 2 is a central horizontal section through the wheel and scroll. The same letters on both figures indicate similar parts. The invention relates to central discharge wheels, and consists in an arrangement of the buckets and plates between which they are secured, in such form as to receive the direct action of the water at the periphery of the wheel, whence they verge from a vertical towards a horizontal course along the shaft, forming a double conical screw, which is affected by the re-action equal to the excess of motion of the water over that of the wheel.

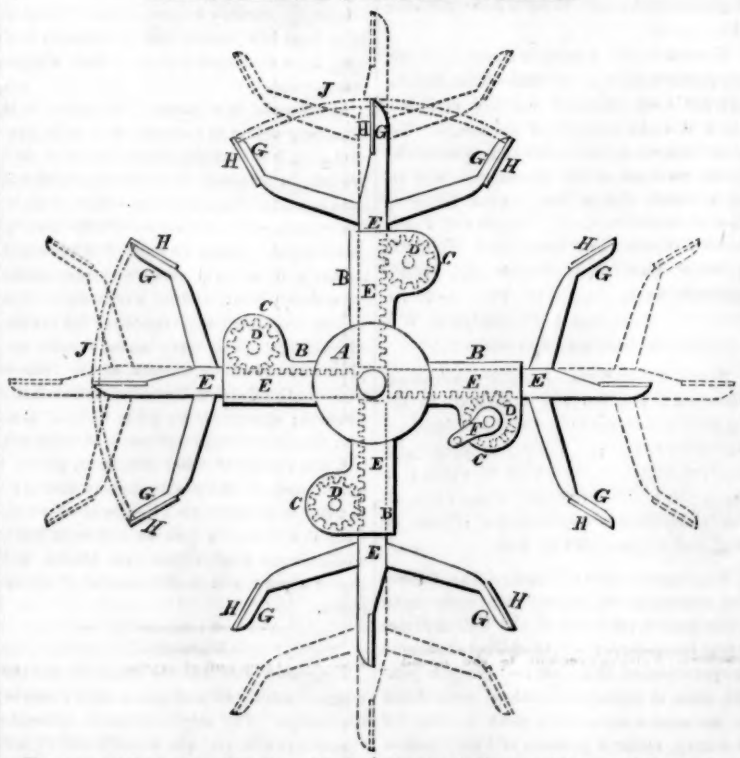
A represents the flume for conducting the water to the wheel, it is so arranged that about one-third (more or less, according to circumstances) of the area of its cross section, overlaps the periphery of the wheel, so that that portion (one-third) of the water strikes on the first bukst, the balance being conducted onward in the gradually tapering scroll, B, each bucket around the wheel will be acted on by the direct force of a portion of the water in its passage through the scroll until the whole of it enters the wheel; the buckets, C, are set in between two annular plates around the shaft, these plates, *d d'*, are curved from the periphery to the axis, as shown in fig. 2, the one, *d'*, being secured to the shaft whilst the other, *d*, is attached to it by bolts passing through both near their peripheries, and clamping the buckets edgewise between them, the buckets are cut straight, their edges are parallel, and in conforming to the curved plates, they are twisted about one fourth round, so that the end near the axis of the wheel is nearly at right angles to that at the periphery (and may be continued with the same varying curve and twist as represented in dotted lines) forming a spiral or screw partially around the shaft, which gradually straightening, terminates parallel with the shaft, the end being radial, and its edge at right angles to the longitudinal center line of the shaft. This form of wheel on a horizontal shaft should be constructed double, so as to discharge the water to the right and left equally (as represented) to obviate any lateral pressure on the journals which would result from the re-action of the water on the screw part of the buckets, it is discharged on one side only, but if on a vertical or inclined shaft, the single wheel should be used, discharging the water downward, in which case the buckets may be continued in a spiral form indefinitely down the shaft; the flume, A, may be arranged either vertically or on an incline, as most convenient. The water, in passing through the wheel, is made to change its course after striking the buckets at the periphery of the wheel, converging towards the center, and escapes laterally at nearly right angles with its course in the scroll, or may be continued until perfectly at right angles thereto, or spirally down the shaft, as described; it travels through the scroll, B, at a velocity due to the hight of its column in the flume, and in its centripetal direction, each revolution of the water in a smaller circle than the preceding one would be performed in a proportionately less amount of time, provided it met with no resistance; then supposing the orifice of discharge at the center of the wheel to be half the diameter of the wheel, the water, if unobstructed, would, at that point, make two revolutions in the same time that it would occupy in performing one in the scroll at the periphery of the wheel; again, supposing that the periphery of the wheel to travel at the same velocity as the water in the scroll, the orifice of discharge being half the diameter, would travel through half the space, consequently, the motion of the water at the discharge, if unchecked, would be double that of the wheel at that point, and so in proportion at different parts of the wheel between said orifice and the periphery, and will therefore re-act upon the wheel's buckets in proportion to such excess of motion of the water over that of the wheel at the various parts thereof. The water entering the scroll and passing round the periphery of the wheel, strikes with a direct pressure on the convex side of the bucket, the wheel revolving in the same direction that the water passes through the scroll, the water, in being crowded towards the axis of the wheel, maintains a continuous bearing on the bucket, equivalent to the excess of motion of the water over that of the wheel, as described, and the direction in which it strikes the bucket is such that it does not infringe thereon, but follows smoothly round, until it arrives at the discharge orifice; whereas, if the water were to strike on the concave side of the bucket, it must impinge to another point in its surface, so that the space between these two points of deflection on the bucket would be but slightly, if at all, affected by the pressure or re-action of the water, and considerable fluttering of the water, and consequent unsteadiness of motion in the wheel would be the result, whilst in this, the combined direct action and re-action of the water is secured, and steadiness of the wheel obtained.

More information may be obtained by letter addressed to Mr. Howard, at Lyonsdale.

HOWARD'S WATER WHEEL.



ADJUSTABLE PADDLE WHEEL.



The annexed figure is a side view with the interior parts in dotted lines, of an adjustable paddle wheel. for which a patent was granted to Levi M. Dehart, on the 3rd of last April. The nature of the invention consists in providing hollow arms, which are permanently fixed to, or a part of, the hub, into which other arms are passed which carry sections of two or more floats or buckets The fixed arms being provided with a spur wheel, and the movable arms with a rack, so that the latter arms with their buckets may be drawn into or run out of the hollow arms, for the purpose of diminishing or increasing the diameter of the wheel at pleasure.

Several plans of making reefing buckets have been essayed, but this differs from them inasmuch as by drawing in the buckets towards the center, the same still project, and the circumference of the buckets only, and not of the arms, is, or can be diminished by such plan.

The hub, A, and the stationary hollow arms, B, may be cast in one solid piece, or the arms, B, may be secured in any permanent manner to the hub, A, or the hub and arms B, may be cast in two sections, divided centrally at right angles to the shaft or axis of the wheel. This will admit of the interior of the hollow arms being planed out, so that the sliding arms may fit snugly therein. An enlargement, C, is left at or near the end of the arms, B, in which is arranged a spur wheel or pinion, D, the axis of each of which may pass through the arms to receive a crank, F by which they may be turned. These spur wheels being enclosed within the arms, are beyond the reach of injury. E are arms fitting within the hollow arms, B, and are provided with a rack into which the pinion, D, takes, and by means of the winch, F, the arms, E, may be run in and out at pleasure. The extreme outer ends of the arms, E, may terminate in two, three, or more branches, G, on each one of which is a bucket, H. By arranging the buckets in sections on the arms, it expedites their adjustment, as several may be thus moved at one time. When the arms, E, are run in or out to a suitable or desirable distance. they are held in adjustment by a set screw, pin, or bolt, or any other well known contrivance.

Each of the series of buckets may be united by a metallic segmental brace, J.—The arms, buckets, &c., indeed the entire wheel may be increased or diminished, as experience or the special purpose to which they are to be applied may require.

More information may be obtained by letter addressed to T. O. Yarington, of Reading, Pa., who is joint owner of the patent with Mr. Dehart.

Scientific American.

NEW YORK, AUGUST 4, 1855.

Freedom from Danger in Descending Wells.

Quite a number have lost their lives from gas by descending into wells, for the purpose of cleaning them out, and the Cleveland (Ohio) *Herald* gives an account of a case which recently occurred in Columbus, in that State, where four persons, after being nearly deprived of life in a well, were only rescued from their perilous situation at their last gasp. The cause of death in such cases is carbonic acid gas, or as it is familiarly called, "choke damp." It prevents respiration; it extinguishes flame, and is generally found at the bottom of wells, it being of greater specific gravity than air. It is generated by vegetable decomposition, and also by combustion, and commonly finds its way into wells from seams in the strata of the earth, from adjacent places where chemical action is going on. Any well may be descended with perfect safety by the use of quick or fresh burned lime, recently slacked, or without being slacked. When there is choke damp in a well it can easily be known by letting down a lamp or candle by a cord. If the light burns freely, it is a sign that no choke damp is there, and the well may be entered with safety; but if the candle burns dimly, or is extinguished, it is a sign of danger. To remove this gas so as to render it innoxious to the person entering the well, all that has to be done is simply to throw down some pieces of fresh burned lime into the water, and agitate it with the bucket on the rope, or with a pole. Another plan is to slack the lime in a small heap, mix it with water in a tub, and throw down three or four pailsful into the well. Or if it is desired to enter the well and not disturb the water in it, take about half a pailful of slacked lime, mix it quickly with cold water in a small tub, and lower it down into the well by cords attached to its lugs, so as to rest on the surface of the water. The contents of this tub must be stirred up for ten minutes with a pole in the well and then left suspended for an hour. When drawn up, any person may descend the well with safety. The philosophy of this is, that moist lime has a great affinity for carbonic acid gas, and it therefore absorbs it rapidly from the atmosphere. If we take some fresh slacked lime, and stir it up in a vessel containing cold water, and allow it to remain so for five or six hours, a hard scale, like that of thin ice, will be found on the top of the water. This scale is carbonate of lime, formed by the absorption of carbonic acid gas from the atmosphere (a very small quantity of carbonic acid is mixed with all the air we breathe) and the scale is a thin pellicle of stone—marble. The lime of good mortar becomes hard by returning to its former condition of limestone, by the absorption of carbonic acid gas from the atmosphere, and the formation of a thin scale of carbonate of lime on a lime vat, affords evidence of the manner in which some of the sedimentary rocks were formed. No person need be afraid of descending into a well if he pursues the directions given. By letting down a candle into the well, after the lime has been allowed to play its part, its light will indicate when it is safe to descend. For the safety of life, we hope this information will be circulated far and near.

Locomotion; Resistance of the Atmosphere.

The *Tribune* of the 16th ult. contains a long editorial article on locomotion, in which are some very good and some erroneous ideas. It has however suggested a subject often misunderstood, viz.: the resistance of the atmosphere to railroad trains. In speaking of the resistance of the atmosphere to railroad trains, it says, "were it not for this they could be very economically moved (at the rate of several hundred miles per hour. The resistance would be less for the fast than the slow trip, and with the engineering requisite for the circumstances, the swiftest cannon ball might be easily outstripped." The object of the *Tribune* was to show the benefits that would be obtained by the vacuum or atmospheric tube railway of Ithiel S. Richardson, of Boston, which has been illustrated in our columns, but like Barnum with the Fire Annihilator, it has so far exaggerated those advantages as to push them into the regions of fable. The initial velocity of a one pound cannon ball, with a charge of 12 ounces of powder, is 1680 feet per second, or 1145 miles per hour. If the removal of atmospheric resistance can make railroad trains travel at this velocity, according to the *Tribune*, it is time that something was done to obviate that resistance which, at the common rate of our express trains—45 miles—shows a loss of speed amounting to 1102 miles per hour. That our railroad trains meet with such a resistance, no man in his senses will credit.

But what is the atmospheric resistance to locomotive trains? It is a mere trifle; this we can easily demonstrate. The resisting pressure upon the square foot of a body passing through the atmosphere at 50 miles per hour, is 12½ lbs. If we consider the front end of a car moving at this rate to contain 50 superficial feet (nearly 7×7) in round numbers, we have atmospheric resistance to the train passing through it, amounting to 50×12½=625 lbs. Now a locomotive with two 12-inch cylinders, carrying steam at 120 lbs. on the square inch, exerts a pressure in round numbers of 27142 lbs. Thus—area of cylinders $12^2 \times .7854 \times 2 = 226.1952 \times 120$ lbs.=27143·4240÷625=43·42, only a forty-third part of the pressure exerted by the two small cylinders, The pressure upon each square inch of the car only amounts to a little over 1·37 ounces (12½×16÷144) not two ounces. Two and a half pounds extra pressure of steam will balance the entire resistance. After the removal of this small pressure from railroad trains, by what rule of science can the *Tribune* make them surpass in velocity the flight of a cannon ball?

The amount of resistance of water to a vessel or body passing through it, and the best methods of diminishing that resistance, are questions of some importance to the scientific world. Great improvements have been made within the past twenty years in forming the hulls of vessels, by which their speed has been greatly increased, and yet we find in the very last number of the *Nautical Magazine*, published in this city, that the best shape of vessels is still a problem. Sir Isaac Newton, in his *Principia*, has pointed out the solid of least resistance, and Scott Russell has claimed the discovery of the "Wave Line" as being the best for ships, and yet we are told that the best form for ships is *still a problem*, and one too of vast consequence to shipbuilders. It is one, however, to which our railroad engineers do not seem to devote much attention, because it is not as important to them as to nautical architects.

Post Office Management.

Although we are far in advance of all other nations in a free government by the people, and in the general economy of its administration, still we must confess that in some things, we are be hind some other countries. In Post Office management, for example,—respecting which we should stand, like Saul, above all other governments,—we are, on the contrary, behind Britain and even despotic Prussia. In England and Prussia, the safest and most convenient way of transmitting money is through the Post Office. In the last-named country, so safe and convenient is the postal system, that it is customary for persons going to distant cities, to deposit the money they intend to use at the end of their journey, in the Post Office, before they start, and get an order for the same, the government becoming responsible for it. This is also the case in England, and has been found to operate well. In Berlin, Prussia, a plan is in operation, which we should like to see introduced into all our cities; it consists in having light Post Office wagons, with letter deposit boxes, pass through the streets at regular intervals every day, to carry letters to the General Post Office. The people have but to drop their letters at their own doors, into the wagon, and away they go safe to different parts of the world. With our stamp system, this could be easily carried out in all our large cities, and would be a most convenient arrangement.

By a recent law, the Province of Canada has started out in advance of us in Post Office improvements.

All Canadian newspapers are allowed to pass free in the Province, and no charge is made upon those from England. The expenses to carry out this system must be paid from the general fund, but such an appropriation is a wise one? It facilitates the circulation of useful information, and thus it tends to educate the people. To this system, the aphorism of Lord Brougham, "the schoolmaster is abroad," may well be applied. The spirit of democracy is to adopt every system which will benefit the people, let it originate where it may. We therefore hope that our people will give these remarks a careful consideration prior to the meeting of Congress, in order that our Post Office system may be reformed to meet the wants of the age and the people. We must yet engraft the "money order," ocean penny postage, free newspapers and periodicals, and the cheap carriage of light packages upon our postal system. Until we do this, we will be behind Britain and Prussia, and this we should not be in anything.

Iron Shipbuilding.

We suppose that a number of years must pass away before iron ship-building will be carried on to any extent in our country. Timber *versus* iron ships is simply a question of economy: we can build timber ships for less than iron ones, therefore while we can do this, such ships will take the lead. In some other countries, where plate iron is cheaper and timber dearer than with us, iron ship-building has become a great business. Glasgow, in Scotland, stands pre-eminent for steamship-building. The new steamship *Persia*, for the Cunard Line, has recently been launched there; it is built of iron, and is the largest iron steamship afloat, being 360 feet long on the keel, 45 feet in breadth, 32 feet deep, and of 3600 tuns burden. The length of it is eight times that of the breadth—showing how different the proportions of vessels are now from what they were thirty years ago, when three times the length of the breadth was considered the best ratio of proportions. The breath across the paddle boxes, however, is 71 feet: still, it appears to us, that a little more breadth of hull would not have been amiss to give her greater stability in the water. Robert Napier & Sons are the builders of both hull and engines; the latter will work up to 4,000 horse power—so it is stated—but the horse power of marine engines is a very indefinite matter. Three years ago the British Government would not allow an iron steamer to carry the mails; this decree is now reversed.

This monster of a vessel is built in seven water-tight compartments, and will have accommodations for 300 passengers. She will be ready for sea in October, and unless the British Government take her up for the Crimean service, we may expect to see her here about the month of December next.

There are thirty-six iron ship-building establishments in the neighborhood of Glasgow, on the river Clyde. The capital employed is $10,000,000, and 50,000 skilled workmen are engaged; and at the present time they have 32 new iron ships on the stocks. The arrangements for their construction and alteration are very perfect. A short time since an iron steamer was lengthened 30 feet, and her capacity for carrying increased 200 tuns, in 14 days. Another steamer was cut open in two places to avoid removing the engines and boilers, and 35 ft. added to her length, in 21 days.

A few of the small steamers for carrying coal between this port and Philadelphia, are built of iron, and so was the steamer *John Stevens* (recently burned,) but, as we said before, while timber vessels can be built cheaper than iron ones, we do not expect to see many of the latter running on our waters.

The Collins' Steamship Co. are about to build a fine new steamer to replace the *Arctic*. She is to be much larger than any of their present vessels, and will no doubt be a credit to her builders.

Gas Carbon.

In the list of claims this week, it will be observed that a patent has been granted for the use of *gas carbon* in the manufacture of iron. This substance is not a gas, as many may be led to suppose, for carbon cannot be obtained in that state, but is merely the name for the quality of carbon, as it is a substance found in various conditions. It is found nearly pure as the most brilliant of all gems—the diamond; also as graphite, of which our common pencils are made; as the anthracite coal which is used for cooking our food, warming our dwellings, and raising *our steam*; as lamp black for painting, and as charcoal for manufacturing purposes. The uses and combinations of carbon are moreover beyond description. Gas carbon is the product of a slow deposition of carbon from coal gas at a high temperature, and is frequently found lining gas retorts, and filling up accidental fissures in them. It has a considerable resemblance to black lead, but is too hard to give a streak upon paper. It has a metallic luster, generally compact, but sometimes found in fine fibers. It appears to us that it must be excellent for manufacturing iron, but it cannot be obtained easily, nor at a low price.

Complimentary Token.

We beg to acknowledge the receipt of a very complimentary letter from the Members of the Mechanics' Institute, of this city, through their able Corresponding Secretary, Chas. H. Delavan, Esq.

The honor of being elected to an Honorary Membership of so useful and distinguished a Society as the Mechanics' Institute has become, is one that will be ever appreciated by us, so long as its present standing for usefulness is sustained.

Fiendish Railroad Outrages.

A diabolical attempt was made on the 18th ult. to throw one of the trains of the Hudson River Railroad off the track at Greenbush, by placing a large rock on the rail. The night was very dark, and the train experienced a severe shock, but was not thrown off.

On the night of the 19th, the express train on the Central (N. Y.) Railroad was thrown off the track, three miles west of Syracuse, by a rail being misplaced by some demon in human shape. None were killed, but three or four persons on the train were severely hurt. Hanging is too good for any person guilty of such crimes.

The American Institute.

The Institute is determined, we understand, to make a considerable flourish this year, the Crystal Palace having been engaged for its Fair to be held in October. Castle Garden being converted into a grand receiving place for emigrants, the Institute has no where else to exhibit but in the Crystal Palace. It may be a little too far up town, but we hope the Fair will be a good one. The managers of the Institute have, by this time, learned considerable by dear-bought experience in conducting fairs; we think they will make amends for past errors, and come boldly up to the summit of excellence in impartiality in the awarding of prizes, and honorable efforts to do "the genteel thing."

Steamship Burned.

The fine new steamer *America* was burned to the water's edge at Crescent City, Oregon, on the 27th of June last. It was the finest steamship in that Territory, and cost $140,000, on which there was no insurance.

Gold in Oregon.

Rich gold diggings have been discovered up the Columbia river, near Fort Colville, in Oregon.

In the notice, in last week's Sci. Am., of the engine to work Dr. Gorrie's Ice Machine, for 30 read "10 horse power."

Foreign Editorial Correspondence.—No. 9.

Paris Exhibition, &c.

PARIS, July 5, 1855.

I mentioned in my last letter the discovery of a new metal by a young chemist, M. Deville. He has made another discovery that promises well; but I just now remember that French chemists, although vigilant and often successful in their researches, are sometimes a trifle out of joint in the practical results of their published discoveries.

To sustain this point it is only necessary to consult the voluminous works of the French Academy of Sciences. They have not yet succeeded in making diamonds, nor in producing gold, but I confess they have been able to cheat the eye in each of these substances with much effect, and it now remains to be seen how far Deville's labors are to be made practically useful. He has on exhibition specimens of the metal called *titanium*, an infusible substance resembling oligist iron. He obtains it by extracting pure silicon from the acid of flinty pebbles, which combines with rare affinity with all metals, and gives to them, and especially to copper, a greater degree of hardness than that of steel, and is proof against the biting of the file, and can be substituted for steel or cast iron in many of their applications. The process claims cheapness and simplicity, and upon these points the discoverer rests his hopes of success.

France is comparatively poor in metals of all kinds, and it is only by dint of industry that she is enabled to produce specimens equal to England and Germany. The copper mines of France are merely found in a state of sulphurets, or pyrites, and scanty at that, and it is only by the aid of repeated smeltings (20 and 30 times) that the pure copper can be obtained. It will be readily understood that such repeated manipulations in a country where fuel is very costly, enhances very much the net cost of copper, and for this reason French copper cannot enter into competition with that of other countries. A new method of treating it, called the wet process, has recently been discovered by M. Barruel. The sulphurets are several times roasted, and the excess of sulphur contained in them supplies all the necessary fuel for their combustion,

The products obtained by these repeated roastings are sulphurous acid, oxyd, and sulphate of copper. This mixture is then washed in water, and the sulphate of copper alone is dissolved. The liquids are then manipulated by means of lime or magnesia, which give out additional oxyd of copper that is joined to the former; and the sulphate of magnesia, which is also formed by this process, is employed for coloring purposes.

Thus copper is obtained by this process in the state of oxyd, without any expense of fuel; and to obtain pure copper equal in richness to the finest specimens of foreign countries, it is only necessary to melt the oxyd by heat. The process has been tried with much success, and will probably change the copper metallurgy of this country. The chemists of France have paid a good deal of attention to the subject of artificial manures —and there are already in operation several extensive manufactories devoted to this branch of business.

I understand that immense cargoes of it are sent to the United States in exchange for guano. These artificial manures are made of the residuum of blood, excrements of animals, carrion bones, horns, and greasy matters. Ammoniacal waters obtained from gas are collected and mixed with the sulphate and phosphate of lime, silex, and coal in dust. The office of the latter is to prevent putrefaction of all azotic substances, and to preserve them in its pores, in order to restore them afterwards to vegetable plants in such quantities as they may require in their development. In the substances compounded into this kind of manure, every vegetable finds an element of its existence, and thus without the loss of a single available product for other uses, France supplies an artificial manure of great value.

The reason of the exchange of this manure for the guano of South America, is because the French manure is better adapted to supply natural nutriment to the sugar cane, while guano is found to be better for the soil of France.

A process for the better preservation of alimentary substances, has very recently been put into practice here. It is the invention of M. Masson, who has some specimens on exhibition. The system commonly practiced here has been to preserve vegetables in alcoholic liquids, which imparts to them an offensive taste. The immediate element of fermentation in vegetable, fruits, and meats, is water. By the process of Masson this element is abstracted by the heat of graduated ovens, and are thus rendered free from putrefying causes; and to give back the flavor of the substances thus treated, it is only necessary to dip them into water, which is said to restore them almost entirely to their original condition. For army and navy purposes, this process, if correctly based, will be useful, and it has already received the attention of a well known house here, who are engaged in working it, it is said, with complete success.

Owing to the failure for the past two years of the vineyards of France, to supply the people with wine,—an article that enters into the daily consumption of almost every family in the country—the government rescinded the duty upon Spanish and Italian wines, which have a peculiarly sweet flavor. Advantage has been taken of these wines for the fabrication of an artificial wine that has shammed the genuine to such an extent that the best critics find it difficult to distinguish between them. By a mixture of the juices of the apple, pear, and grape, a very palatable beverage is produced, and in considerable quantities, but the greater trade is carried on by the aid of the imported wines, mixed with sugar, and a cheap alcohblic substance imported from the United States.

The system of adulteration so well known in our country is beginning to come into use here, and unless the fatal disease of the last two years—that has so seriously injured the grape—is remedied, sad results will come of this nefarious mixture.

I observe in the SCIENTIFIC AMERICAN of the 2nd of June, a brief notice of a plant called *Colza*; it grows in abundance in the north of France, and also in Belgium, and is extensively employed for the manufacture of oil. Colza, of a good quality, must have full, black, smooth grains; they require to be kept in perfectly dry granaries, and should be frequently moved and aired.

Vegetable oils, as is very generally known, are of two classes; 1st. Siccative Oils, which are extracted from flax seed, heads of poppies, nuts, &c. 2nd. The non-Siccative Oils, which are extracted from the olive, colza, almonds, sun flower, &c.

The soil of France is most perfectly adapted to the growth of these productions; they are sown in October or November, and ripen in May or June, and hence occupy the ground but about six months.

In the fabrication of oils from the seeds of the colza, the following processes are necessary (I speak of this plant because it is the most important):—1st. Cleaning or winnowing the seed. 2nd. Crushing. 3rd. Warming by fire or steam. 4th. Expression. After this process is gone through with, a second crushing is necessary; also a second warming and pressing. The crushing is done by grooved cylinders, and the finishing by means of vertical mill stones rolling over a table warmed underneath by steam. The stones commonly used are granite, and are made to revolve about a dozen times per minute. The oily pulp is then placed in horse-hair bags, and pressed by horizontal hydraulic presses. Some 20 or 30 ordinary bags are pressed at one time.

The pressed cakes are then removed from the bags, and are submitted to a repetition of the same process, The oil thus produced is of the first quality for illumination. This is not all: the refuse of the pressed seed is given to cattle, and forms a very useful food for them. The oil is purified by mixing it with sulphuric acid and hot water or steam, and shaking these substances together in a hermetically sealed vessel. After two days this oil is completely refined and ready to be removed. Two parts of acid are only necessary for 100 parts of oil to effect its purification, providing hot water is used. If steam is used only half a part of acid is necessary. This subject, as suggested by the SCI. AM., is really worth the attention of our farmers.

In France there is a Society of Acclimation, whose business is to undertake to acclimate any useful plant or animal not found in the country. An effort is now being made to cultivate a plant called the *Sorgho*, from China. It grows to the hight of indian corn, and from developements made with it, it promises to be a successful competitor of the beet in the manufacture of sugar. It has the advantage over the beet in not impoverishing the soil, as it extracts from a smaller quantity of potash and soda. The stalk is crushed like the sugar cane, and gives out a sugar superior to the beet root. The specimens on exhibition are fine. It also affords alcohol, which is obtained by the usual process of distillation.

I notice this matter for the purpose of calling attention to the labors of this Society: its objects are praiseworthy, and the result will aggregate many important benefits to France as well as to the whole world. It is a subject not unworthy the attention of American agriculturists, and I hope a similar society will be established in our country.

Americans very generally entertain the idea that the Paris Exhibition is a small affair in comparison with the London Exhibition; and one writer in a New York daily paper even places it below the New York Exhibition. In contrast with these mistaken ideas, I copy a resolution adopted at a late meeting of the English jurors under the Presidency of Lord Ashburton. It was unanimously resolved:

"That it is desirable to call the attention of the English public on the great merit of the Exhibition, and its *superiority* as regards the objects exhibited over that of 1851, and is eminently worthy of the attention of artists, manufacturers, and their workmen, and of all classes of the United Kingdom."

It is equal to the London Exhibition in size, and only wants the immense Crystal Palace of Sydenham to make it superior to it in effect.

The New York Exhibition is a mere bagatelle, a fly-blow, in comparison. For the two Sundays past more than 200,000 people have visited it, and I am sure none are disappointed who take the pains to visit every department. I have occasionally come across an American who, with all his pretended shrewdness, only gets a sight of one half of the Exhibition, and when he goes away half fed he is likely to cry failure, failure,—but it is unjust..

I met an American the other day, just retreating from the "annex," who did not know, until I told him, that he had not seen the Grand Palace. In regard to the speculation, that is not our affair, as we have nothing to do with the money-drawer. The French Government stands between the Company and all harm on this point. S. H. W.

Gophers, Turtles, and Salamanders.

MESSRS. EDITORS—In a late number of the SCIENTIFIC AMERICAN, I saw an article upon the subject of "Gophers," in which you describe them as "a short, thick animal, of the mole species," &c. Since reading the above I have asked several men, who have lived in low, sandy countries, about gophers, and they all agree in describing them as somewhat resembling the common turtle, with the exception of being much thicker, and stouter built, and the lower shell projects some inches in front, something in the form of a spade, and supposed to be used for the purpose of excavating the soft sandy soil, in which they burrow like moles. They are noted for their extraordinary strength, one of medium size—say ten or twelve inches across, being able to carry a moderate sized man on his back, though their motion is very slow and heavy.

There is no doubt of there being such animals, and if they are not gophers, what are they? Perhaps some of your readers who have resided in the low countries can tell me something about them. I have been familiar all the early portion of my life with the animals which you describe, and which I have always heard called "salamanders," but whether that is their true name or not, I cannot say. When killed, the pouches in their cheeks are almost invariably found filled with small roots, in which I suppose they collect for food. I do not think they ever stir out in the day time, for although I have lived where they had thrown up the earth in almost innumerable little hills, I do not recollect ever to have seen one at work.

J. DAY BARRON.

Lowina, Ala,, July, 1855.

(For the Scientific American.)

Discovery and Invention.

In a recent number of the SCIENTIFIC AMERICAN, you quote from the Springfield *Daily Republican*, a sentiment which I think is not only incorrect, but very detrimental to the cause of improvements. That there may have been such a thing as an "accident or a fortunate blunder," by those who wander about in the field of science and art, I will not deny; yet I believe that the largest portion of those so-called accidents or blunders partake more of certain propensities than of the constructive faculties.

My fixed and settled opinion is, that the only correct basis for an inventive genius to work upon, is to see a great end or result which it is desirable to accomplish—seeing the disadvantages of the means already in use, with a full knowledge of the natural laws that God has wisely ordained—than to the mind that can reason from cause to effect (like many who have already blessed the world with the Springfield gentleman's so-called accidents,) can we look for still further improvements, which stupid gentlemen may call "blunders."

How is it that these gentlemen can journey by sea and by land from 15 to 20 miles per hour, upon the swift wings of steam, as comfortably situated as when at home in their own parlors; or should they happen to conceive an idea of any importance, it takes a lightning's leap, and distant friends are almost instantly made happy by somebody's "blunder."

I do not wish to deny the existence of straw and chaff, where there is wheat, for our Patent Office Reports show it, but was it a blunder in nature to produce the straw and chaff as well as wheat.

Messrs. Editors, I have had some experience in this line, which may apologize for my sensitiveness on this subject, (I can furnish you a list of over seventy distinct and useful improvements, now in use, made by the writer within the last thirty years, all of which sustain the truth of the old adage, "that necessity is the mother of invention." A few of these improvements the writer has had patented, and some rejected, and twelve of them have been patented by others since the writer had them in use.)

I do not deny that I have made blunders, but the best results and the largest portion have not been blunders; neither have they been the result of long and tedious labor, but a pleasant and easy application of cause to effect, and the result equally satisfactory.

Men of science cannot, as a mere matter of course, be inventors, but an inventor to be successful and sure, must be a man of science. Inventive genius is a much more common article than sound judicious application of means to an end. G. W. H.

They have a newly invented cannon in Nantucket which throws a ball ten miles! The Mexican Government have purchased twenty-five of the smallest, and it is expected that orders will be received for a supply of the larger ones for the Crimea. The principle involved in the construction is not stated.—[Exchange.

[The principle of this cannon must be the same as that used in the manufacture of the celebrated three-league boots, which enables the wearer to propel nine miles at every stride. Wonderful, truly, is the march of invention. Sebastopol cannot hold out much longer.

TO CORRESPONDENTS.

☞ Will some of our readers who have used Bates' Patent Apparatus for the cure of stammering, which was illustrated on page 370, Vol. 9, SCIENTIFIC AMERICAN, please to communicate their experience to this Office, for the benefit of many enquirers.

J. D. B., of Ala.—Yours will meet with attention.

G. D., of Pa.—Yours has been received, and will meet with attention.

F. S., of N. Y.—The improvements which you describe might make rotary reapers superior to the reciprocating kind. You will find a rotary reaper illustrated on page 144, Vol. 4, SCIENTIFIC AMERICAN.

F. P. H., of——Friction matches are made by dipping their ends first in molten sulphur, then in a composition of phosphorous, gum, and a little chlorate of potass. The latter operation is conducted with great caution. The other matter mentioned by you will be carefully regarded.

B. J. B., of Ill.—There is no periodical published in our country especially devoted to architecture.

J. B., of Pa.—There is a loss of heated water in forming the vacuum in a steam engine, but there is no more economical way to form it.

J. A. A., Jr., of N. C.—Any of the turbine wheels illustrated in our columns, will answer your purpose Mr. Van Dewater's is a good one.

E. D. G., of Mo.—Send to Mr. Wiley and he will forward his catalogue. The price of the work you refer to we cannot tell, we think it is fifty cents.

T. S. I., of——It was a mistake of the writer to locate Strasburg in the West of France.

E. H. H., of Ind.—We do not consider that any loss was sustained in Prof. Page's engine by converting the reciprocating into a rotary motion through a crank. We advise you not to waste time and money on the project.

J. S, H , of Pa.—We think it doubtful whether a patent could be had on your corn sheller. The only way is to try.

S. H., of Mass.—Placing rollers under a stone-boat, to avoid friction, is not new or patentable.

A. M. F., of Mo.—A patent could be had on a card machine cleaner if the improvement was new. $1 received.—Paper will be forwarded.

T. L. I., of——Your saw gummer strikes us as possessing patentable features. Whenever you desire to apply for a patent send on a model and the government fee of $30.

T N., of Mass.—We do not remember to have seen a lock like yours; and yet we think there would be great doubt about your being able to obtain a patent. So many improvements have been made in this class of inventions, that all new applications are attended with uncertainty.

E E. C., of N. Y.—The patent for which the Messrs. Tatham are now seeking an extension, as per advertisement in another column, is not the original Hanson patent, but is for certain improvements on Hanson's, invented by the Messrs. T. themselves. The great lead pipe invention of the Hanson's, so long controlled by Messrs. Tatham, is now public property, the patent having expired, and an application for an extension having been denied. All persons are therefore at liberey to manufacture and sell lead pipe under the expired patent.

J. E. P., Jr., of Tenn.—The wire fence of J. B. Wickersham, this city, illustrated on page 232, Vol. 7, SCI. AM., is a good one; it must be kept well coated with paint. Any of the churns illustrated in our columns will answer your purpose.

J. A., of C. W.—You are correct respecting the power of the old tower wind mills. The one illustrated on page 25, this volume, manufactured by the Halliday Wind Mill Co., South Coventry, Conn., is extensively used. So is the one of Allen Judd, of Cabbotville, Mass. If you address him you may obtain some useful information on the subject. The self-regulating wind mill of A. P. Brown, illustrated in our last number, is also stated to work well. The horisontal one of J. S. Morgan, the claim of which is in our last number, may answer your purpose.

O. P. S., of Cleveland, O.—We do not know what per cent of oil is obtained from a given quantity of cotton or sun flower seed. The latter is used in considerable quantities for adulterating linseed oil.

G. J., of Va.—Address Wilmer & Rodgers, New York, for the European *Mining Journal*.

A. W. H., of Mo.—The area of your valve opening being 5·88 inches, and the weight 30 lbs., on a lever four times, in inches, longer from the fulcrum than the other fixed end, the pressure will be a little over 20 lbs., on the square inch, (30x4 divided by 5·88 equals 20.)

D. F. S., of R. I.—We do not know at present of such a situation as you want for an analytical chemist, or we should be happy to give you the desired information.

J. N., of Md —Theoretically you could arrange a pump stock so that the descending water would draw up a small portion of the liquid, as you propose. But "action and reaction are equal;" consequently the descending water would be impeded, and you would therefore lose in its speed (which is equivalent to loss of power) just as much as you gained from the water raised. Theoretically, therefore, there is no gain; practically, we think, you would be unable to raise any water at all on the plan you describe.

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, July 28:—

C. B. B., of Ill., $5; D. & S., of Va., $30; L. C., of N. H., $25; J. W., & A. F., of Me., $25; C. & W., of Tenn., $40; A. E. K., of Ct., $25; J. B. E, of Miss., $30; B. R. E., of Me., $30; J. E., of Mass., $100; W. & M., of O., $29; E. D. C., of Ct., $25; A. W. W, of Miss., $10; H. B. W., of Ct., $30; D. T., of N. Y., $30; F. W. W., of Ct., $12; L. B. B., of Ct., $55; L. E. S., of Ct., $30; P. H. W., of N. Y., $55; L. & W., of N. Y., $25; G. H. T., of Mass., $30; C. & S., of N. Y., $30; S. A. K., of Pa., $30; N. W., of Ala., $15; J. G., of Mass., $30: T. G., of R. I., $30; W. F. F., of Me., $53; M. T., of Ill., $20; E. S., of Ct., $30; M. & N., of Ct., $25; J. L. H., & Co., of O., $17; E. G. R., of O., $27; W. & B. D, of Ct., $30; H. R. S., of N. Y., $30; R. T. S., of N. J., $40; W. S., of Mass., $20; J. W., of N. Y., $20; W. L., of N. Y., $25; T. B., of N. Y., $25; E. B., of N. Y., $27; E. B., of—— $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 28:—

S. B., of Mich; C. B. B., of Ill.; K. & H., of Ill.; A. D. B., of Ga.; J. B., of Ill.; F. W. W., of Ct.; W. & M., of O.; J. W. & A. F., of Me.; J. E., of Mass.; G. C., of N. Y.; A. E. K., of Ct.; L. B. B., of Ct.; J. W., of N. Y.; L. & W., of N. Y; P. H. W., of N. Y.; G. W. C., of O.; J. W. R., of O.; J. G., of R. I.; O. C., of N. Y.; J. D. B., of O.; E. G. R., of O; S. & S., of Ct.; M. T., of Ill.; W. L., of N. Y.; M & N., of Ct.; T. B., of N. Y.; E. B., of N. Y.

Important Items.

BACK NUMBERS AND VOLUMES—We have the following numbers and volumes of the SCIENTIFIC AMERICAN, which we can supply at the annexed prices:—Of Volume 5, forty numbers, bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $3; bound, $3,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, bound, $2,75. Of Vol. 10, all except Nos. 17, 25, 26 27, and 28, at the subscription price.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

RECEIPTS—When money is paid at the office for subscription a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgement of the receipt of their funds.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and sometimes prevent the model from being mislaid.

PATENT LAWS, AND GUIDE TO INVENTORS—Congress having adjourned without enacting any new laws pertaining to applications for patents, we have issued a new edition of the old laws, which may be had at our counter or sent by mail. This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12½ cents per copy.

Terms of Advertising.

4 lines, for each insertion,		$1,00
8 "	"	2,00
12 "	" "	3,00
16 "	" "	4,00

Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide-spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.,
American and Foreign Patent Attornies, 128 Fulton Street, New York; 32 Essex Strand, London; 29 Boulevard St. Martin, Paris: 6 Rue D'Or, Brussels.

SECOND-HAND STEAM ENGINES—One with 11 inch cylinder, 2½ feet stroke, plain slide valve.—One with 12-inch cylinder, 3 feet stroke, high finish and little used. One with 12-inch cylinder, 3 feet stroke, plain finish, and little used, with new boilers and fixtures complete, ready for setting up The above were taken in exchange when larger engines were required, and will be sold at a bargain. L B. HANKS, Agent W. & B. Iron Works, 312 Broadway, New York. 47 1*

STEAM ENGINES WITH WRIGHT'S PATent Cut-off just finished, with heavy cast iron Bed frames, covered cylinders and every thing complete for setting up, including boilers and fixtures. Two with 10-inch cylinders, 2½ feet stroke. One with 18 inch cylinder 3 feet stroke L. B. HANKS, Agent W. & B. Iron Works, 312 Broadway, New York. 47 2*

SUPERIOR EXCAVATING MACHINES—Are built at Pruyn & Lansing's Iron Works, Albany, N. Y., suited to the improvement of rivers and harbors, making canals, or grading roads. The subscriber's improvements recently patented, and his long experience, enables him to excel in all kinds of excavation, under any and all circumstances, both below and above water. It is only necessary for him to know what is required in the way of excavation, to enable him to produce a machine in which the most perfect economy and convenience are combined, to accomplish the object with the greatest facility and the least possible expense For an official statement of the performance of one of his river and harbor machines, built for the U. S. Government, see No. 30, Vol. 10, of the Scientific American. 47 2* D. S. HOWARD.

CAPITALISTS WANTED TO TAKE PATents Abroad—Mr L. G. EVANS, of Spring Hill, Ala., has just taken a valuable patent in this country for an improvement in plows, and desires to find some person who will, for an equal share of the invention in England, or any other foreign countries, pay the fees necessary to take the Patent The cost would be about $350 for England, $150 for France etc. For particulars address L. G. EVANS, Spring Hill Post Office, Ala. 47 tf

TO MANUFACTURERS—THE AMERICAN Water Wheel Co., Wareham, Mass., are now manufacturing to order, Warren's Turbine Water Wheels, from new and improved patterns, got up expressly for manufacturers. These turbines are made in the most perfect manner, and on the most scientific principles. Cotton and woolen manufacturers will do well to examine them before purchasing elsewhere. We also manufacture a cheap turbine on nearly the same plans, but with less finish and less cost. They are well adapted to grist mills and small manufacturing establishment.

J. WARREN, Agent.
A. WARREN, Treas.
47 4

IMPORTANT TO QUARRYMEN, Stone-Cutters, Contractors and Builders—Porter's Patent Spring Hammer Stone-Dressing Machine—The Porter Stone-Dressing Machine Co., having purchased the patent for the above invention, are now prepared to sell rights to use the same; and to furnish Machines, and erect them at any place within the United States. This Machine may be seen in practical operation at the works of the Company, in the city of New York, on 14th street, between 9th and 10th avenues, where parties interested in the business of working stone, and the public generally, are invited to call and satisfy themselves as to its utility. The Machine is very simple in its construction, and not liable to get out of order. It works with about equal advantage on every kind of stone, and will perform the labor of from twenty-five or fifty men at a total expense of from $8 to $12 per day. It produces a finely finished surface, leaves a perfect arris, and cuts mouldings with rapidity and beauty. Its operation is precisely that of the mallet and chisel in the hands of the workman. It combines great power with the nicest delicacy, and has received the uniform and decided approval of practical men. In addition to its regular work, it will be tried on any stone, and subjected to any test, that parties examining it may desire. To those who are unable to visit the Machine personally, a circular with engravings and a full description will be sent on application. Office of the Porter Stone-Dressing Machine Company, 37 Well street, New York. A. B. CAPWELL, President.
47 3 eow

VERGNES' ELECTRO-CHEMICAL BATHS,—200 6th Avenue. Professor Vergnes discovered, some three years ago, a method for extracting metallic substances from the human system, such as mercury, lead silver, arsenic, etc., by means of electro-chemical baths; and also to cure all diseases generated by them, viz.: Dyspepsia, Rheumatism, Inflammatory or Chronic, Paralysis, Painter's Colic, etc. This theory has created much sensation both in this country and Europe, and has, in all cases accomplished what it claims. Not being able to attend to the numerous calls he has daily from the afflicted, Prof. Vergnes has made an arrangement with Dr. Hinkinson, who will hereafter be in attendance, for the purpose of assisting in giving the baths, and also for giving medical advice. N. B. The theory will be fully explained, and certificates given to all competent persons who desire to establish similar baths. 47 4eow *

OIL—ENGINEERS, MACHINISTS, AND OTHers, will find in Weed & Co's. Transparent Oil an article free from gum, nearly fifty per cent cheaper, and much more durable than sperm oil. Also Cumberland Brothers' Patent Metallic Oil (the genuine article) manufactured and for sale by WEED & CO., No. 124 Pearl street, New York. 47 2*

SMUT MACHINE—BEST IN THE U. S.—John D Bedwell's Improved Smut and Grain Separator, patented Oct. 24 1854. This machine combines simplicity, economy of power, with great durability, is strictly guaranteed in materials, workmanship, and capacity, and any machine ordered is not to be paid for until after full trial and approval. (References will be expected.) In cleanliness, scouring the grain and separating it from impurities, it is warranted to excel any other machine in use. Circulars forwarded. Manufactured by the inventor, and for sale at Uhrichsville, Tuscarowas County, Ohio. JOHN D. BEDWELL. 47 1*

NOW COMPLETE.—Mone's celebrated treatise on American Engineering, consisting of Division A—Nine Numbers—River Boat Engines. Division B—Six Numbers—Marine Engines. Division C—Six Numbers—Locomotives. Division D—six Numbers—stationary Engines. This superb American Work, contains 54 elaborate Drawings, 24x30, and is pronounced by practical Machinists and Scientific Men, the best work of the kind ever issued. Each Division is complete in itself. Price $1 per number.

SAMUELS, CONGDON & CO., Publishers,
1 No. 310 Broadway, N. Y.

A DRAUGHTSMAN WANTED—A good pattern maker, who understands drafting and designing stationary steam engines, mill work, &c., can find steady employment. If terms and references satisfactory, by addressing LIDDELL, KEPLER, & CO., Erie, Pa. 47 2*

PATENT CORK CUTTING MACHINE—This machine is capable of cutting two corks of different sizes at once. For purchase of machines or State Rights, apply to JOHN FOWER at Mr. Holmes' No. 109 Blackstone street, Boston, Mass. 47 2*

THE WOODRUFF & BEACH IRON WORKS, of Hartford, Conn., L. B. HANKS, Agent. No 312 Broadway, New York. Will furnish to order high and low pressure. Marine and Stationary Steam Engines and boilers. Also, all kinds of machinery for Powder, Paper Sugar, and Flouring Mills, and every description of Iron, Brass, and Composition Castings. Lathes, shafting, &c., of the best quality of materials and workmanship on liberal terms. 47 4*

FOR SALE—A PORTABLE STEAM Hoisting and Pumping Engine—Suitable for loading and discharging cargoes, raising stone for buildings, steeples, &c., also for pile driving. Will raise a hammer 20 hundredweight 60 feet in 30 seconds. By A. L. ARCHAMBAULT, Portable Engine Builder. 15th street, above Willow, Philadelphia. Portable Engines for driving portable saw mills made to order. Power from 5 to 30 horse. Orders filled in three to five weeks. 45 4*

TO RAILWAY CONTRACTORS—To be Let, the clearing, grading, construction, furnishing &c, of 200 to 300 miles of railway, at very remunerative prices. None need apply but principals, and those having ample command of capital as part of the payment will have to be taken in stock, which should not be too hastily pressed on the market. Address Z Y. X., Office of Scientific American, Fulton street, New York. 44 tf

LATHES FOR BROOM HANDLES, &c.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds, Hoe handles, Fork handles, and Broom handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (postpaid) MUNN & CO.,
At this Office.

1855—WOODWORTH'S PATENT Planing, Tonguing and Grooving Machines—The subscriber is constantly manufacturing, and has now for sale the largest and best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania. JOHN GIBSON, Planing Mills, Albany, N. Y. 43 10*

JACK SCREWS AND HYDRAULIC JACKS,—For sale at manufacturers' prices, by FOSTER & LEACH, 26 Broadway, N. Y. 37 13*

JAMES F. STARRETT & SON, Pattern and Model Makers, No. 352 West 27th street, near 11th Avenue, New York Machine Patterns and Inventors Models of every description made to order with dispatch. 45 5eow *

MACHINERY—S. C. HILLS, No. 12 Platt st., N. Y. dealer in Steam Engines, Boilers, Planers, Lathes Chucks Drills, Pumps; Mortising, Tenoning, and Sash Machines Woodworth's and Daniel's Planers; Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 27 e3w

AMERICAN PLATE GLASS COMPANY—(Factory Williamsburgh L. I) are now prepared to execute orders for rough Plate Glass, suitable for floors, sky-lights vault, and deck lights Prompt attention will be given to orders left at their office 442 Broadway, or their agent, J. R. PLATT, 79 Murray st. 47 8*

UNITED STATES PATENT OFFICE,
Washington, July 12, 1855.

ON THE PETITION of Benj Tatham of New York, and Geo N Tatham, of Philadelphia, praying for the extension of a patent granted to them on the 11th day of October, 1841, for an improvement in machinery for making pipes or tubes of lead, tin, and other metallic substances, for seven years from the expiration of said patent, which takes place on the 11th day of October, 1855:

It is ordered that the said petition be heard at the Patent Office on Monday the 24th day of September, next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 14th day of Sept., 1855.; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Penn.; Scientific American, New York; Daily Baltimore Republican, Courier, Buffalo, and Post, Boston, Mass., once a week for three successive weeks previous to the 24th day of September next, the day of hearing. S. T. SHUGERT,
Acting Commissioner of Patens.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 45 3

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store. It occupies a space 5 by 3 feet, weighs 1500 lbs. price $240; other sizes in proportion. 29 e0w

THE DAILY SUN—Mail Subscribers.—The morning edition is forwarded by the early mails to country subscribers, at $4 per annum, or $1 per quarter, payable in advance. The postage under the present law is as follows:—To any Post Office in the State of New York, 78 cents per year, payable quarterly, 19½ cents in advance. To any Post Office out of New York State, but within the United States, $1.56 per year, payable quarterly, 38 cents in advance.

MOSES S. BEACH, Publisher.
Sole Proprietor of the Sun Establishment,
39 Corner of Fulton and Nassau sts.

NORCROSS ROTARY PLANING MACHINE—The Supreme Court of the U.S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringemet of the Woodworth Patent.

Rights to use N. G. Norcrois's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York Boston, 27 State street, and Lowell, Mass. 43 6m*

THE CHEAPEST HORSE POWER KNOWN. Patented April 1st, 1855.—Sampson's horse power has not a gear wheel about it, and it can be constructed and kept in repair by an ordinary mechanic. It costs less and furnishes a larger percentage of power than any horse power known. For the purchase of rights for the District of Columbia, Maryland, Delaware, New Jersey, Pennsylvania, New York, Ohio, and the New England States, apply to Prof. CHAS. G. PAGE, Washington, D. C. 35tf

THE EUROPEAN MINING JOURNAL, Railway and Commercial Gazette. A weekly newspaper, forming a complete history of the Commercial and Scientific Progress of Mines and Railways, and a carefully collated Synopsis, with numerous Illustrations, of all New Inventions and Improvements in Mechanics and Civil Engineering. Office 26 Fleet st., London. Price £6.50 per annum. 36tf

IMPORTANT INVENTION—Patented 7th June, 1853.—Falconer's Coupling for hose, hydrants, force pumps, etc., is the only coupling likely to supersede the screw coupling. It can be made cheaper than the screw coupling, and excels it in every respect, and after a public trial under the severest tests, it has been adopted under an Act of the Corporation of the City of Washington, for the Fire Department, in place of the screw coupling. For the purchase of rights under the patent, apply to Prof. CHAS. G. PAGE, Washington, D. C. 35tf

POWER PLANERS—Persons wanting Iron Planers of superior workmanship, and that always give satisfaction, are recommended to the New Haven Manufacturing Co., New Haven, Ct. 40tf

THE NEW YORK WEEKLY SUN is now sent to subscribers at the following very low rates, payable in advance:—One copy, 3 months, 25 cents; 6 mos, 50 cts.; 1 year, 75 cts; 16 months, $1; 3 copies, 1 year, $2; 8 copies $5; 13 copies, $8; 25 copies, $15. The postage within the State is only 13 cents a year—out of the State 26 cents a year. ☞ No traveling agents are employed. Specimen copies sent gratis. All letters should be post paid and directed to MOSES S. BEACH,
39 Sun Office, New York.

LATHES, PLANERS, and all kinds of MACHINISTS' TOOLS of the best description on hand and made to order by SHRIVER & BROS., Cumberland, Md. (on Baltimore and Ohio R.R., midway between Baltimore and the Ohio River.) 42tf

ANDREWS & JESUP—Commission Merchants, Cotton and Woolen Machinery, Steam Engines, Machinists Tools, Belting, &c., Importers and Dealers in Manufacturer's Articles, No. 67 Pine st., N. Y. 26 1y

MACHINISTS' TOOLS—Manufacturers, Mechanics and Railroad Supplies, Locomotive and Stationery Engines, Steam Boilers, Belting, Cotton and Woolen Machinery, Water Wheels Pumps, Blowers, &c. FOSTER & LEACH,
26 Broadway, N. Y., Selling Agents of the Lawrence Machine Shop. 26 13*

NEW HAVEN MFG CO—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, Address, "New Haven Manufacturing Co." New Haven, Conn. 40tf

MACHINISTS' TOOLS—Meriden Machine Co. have on hand, at their New York Office, 15 Gold st., a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 46 13*

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt Street, New York. 13 tf

A. B. ELY Counsellor at Law, 62 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill Irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
8 1y LOGAN VAIL & CO., 9 Gold st. N.Y.

Science and Art.

The Art of Dyeing.—No. 32.

BLACK ON COTTON.—The common way to dye black on cotton, is to steep the goods in sumac for about twelve hours—three pounds of boiled sumac to ten of goods—then run them through a liquor of lime water, and expose than to the air until they acquire a deep bluish green color. After this they are run through a solution of copperas,—one pound to the ten of goods—and aired again, when they acquire gradually a black color. A common plan is to place about a pailfull of old sumac liquor among the copperas liquor, which it is supposed makes the color work more level. If the goods were dried in this state they would be merely a dark slate, hence they receive logwood on the top of the copperas. But before they get the logwood they are run through another lime water, when they become a deep brown; then they are washed and are fit to receive the logwood. About five pounds of logwood well boiled are sufficient for ten pounds of goods. The goods get eight turns in the logwood liquor, are lifted, then get a little saddening (dissolved copperas,) are entered again, and get three more turns, when they are lifted, washed and dried. It is a common practice to soften cotton black colors by running them through a tub of milk-warm water, containing some unresolved soap—oil and soda mixed together. Blue-blacks receive one or two dips in the blue vat before they are put through the process described. It has been found that by running the goods through a tub of cold water into which a little dissolved bichromate of potash is stirred (this being the last course before drying) makes the color more permanent.

The acetate of iron—black iron liquor—is almost exclusively used instead of copperas in our dye-houses, especially for dyeing black warps. It is placed in long tanks, at a strength of about from 2° to 3°, and used in place of the copperas, in the manner described in the foregoing. Some dyers do not *strip* the iron liquor with lime water, before the goods get the logwood; they simply wash their goods well after saddening, but the best plan is to give them a weak liquor of lime water. Some dyers also keep an open tub of dissolved copperas standing, and use this for saddening, but it is not a good plan, for copperas is a protoxyd sulphate, and imbibes oxygen from the atmosphere when thus exposed, becoming a peroxyd sulphate, which is far inferior, as a re-agent for dyeing black, to the protoxyd.

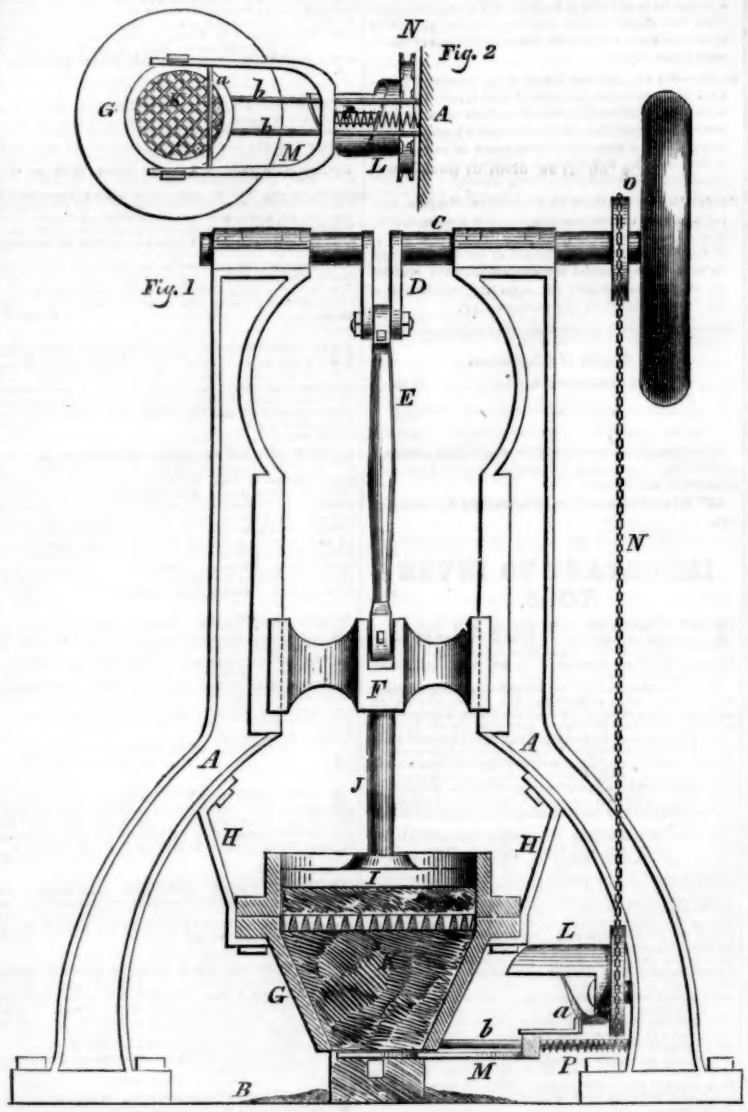
It has also been found that hard spring water, containing some salts, such as carbonate of lime, is much better for dyeing black than pure rain water.

If, instead of saddening goods, (running them through the acetate of iron,) as described, with one dip, they get two dips in the iron—airing them well after each dip—the color will be more permanent. And if instead of receiving logwood alone, as the coloring dyewood, they receive four pounds of logwood, one of madder, and one of alder bark in a boiler heated to 180°, the color will be much faster. Cotton dyed black is rendered harsh and hard by the lime and iron, hence the necessity for softening it with some oil before drying. Some dyers use pure olive oil without *breaking* it with an alkali, by simply pouring the oil into a tub of hot water, stirring it well, then entering and handling the goods rapidly, and finish. This is the best plan for yarn; catechu is sometimes used as a partial substitute for logwood in dyeing black, but it is not so good for this purpose.

Fast black can be dyed with madder instead of logwood, by the Turkey-red process of preparation, and using acetate of iron for the mordant, after sumac, but this is such an expensive process that it is very seldom practiced. The best quality of blacks for ginghams are dyed with an indigo bottom, as has been described; two dips in the saddening, and then topped with logwood. Great care must be exercised to air the goods well after each liming and saddening, and the iron liquor should be given rather weak, about 1° in the hydrometer is strong enough.

The processes for dyeing black on cotton are all different from those for dyeing the same color on silk and wool, and far more troublesome. Cotton treated like wool or silk, in dyeing black, will be no better than a dirty slate color. Dyeing is therefore a practical art, and embraces more than the mere chemistry of the substances used to produce a color. As many fabrics are now manufactured, (such as muslin de laines,) of a mixture of cotton and wool, and as much cotton is carded with wool in other fabrics, the method of dyeing them both black is a matter of some importance and value to many of our manufacturers, especially those who have small factories and make only the coarser kinds of goods. The method of doing this will be given in our next.

THAYER'S CLAY KNEADING MACHINE.



The accompanying figures represent a machine for kneading clay, for which a patent was granted to Harlow H. Thayer, of Sandwich, Mass., on the 5th of June last. The invention relates to a new machine for kneading clay for pottery purposes, and consists in the employment of an invented conical press chamber, having a plunger within it, and a peculiar screen and a device in the chamber for cutting the discharged clay.

Figure 1 is a front view of the improved machine, the inverted conical press chamber being bisected vertically through the center. Figure 2 is an inverted plan of the press chamber, and the device for cutting off the discharged clay. Similar letters refer to like parts.

A A represent two uprights constructed of wood or metal, and secured to a proper base, B. On the upper ends of the uprights, a horizontal shaft, C, is fitted in suitable bearings, said shaft having a crank, D, upon it to which the upper end of a connecting rod, E, is secured, the lower end of the rod being attached to a guide, F, the ends of which are grooved and fit over the inner edges of the uprights, A A, which serve as ways.

To the lower parts of the uprights, A A, an inverted conical press chamber, G, is attached by arms or braces, H H. The lower end of said chamber is a short distance above the surface of base B. The upper end of the chamber, G, is of a true cylindrical form form a short distance, in order to allow a plunger, I, to work therein, said plunger being connected to the guide, F, by a rod, J.

At the lower part of the cylindrical portion of the press chamber, and between the cylindrical portion and the conical there is a screen or perforated plate, K, the apertures of which are of taper form. The lower orifices being smaller than the upper one, the orifices are of rectangular form, as in fig. 2.

To the lower part of one of the uprights, A, there is attached a cam, L, against the edge of which the shank, *a*, of a fork, M, bears said plank, being underneath the chamber, G, and working on guide rods, *b b*, the ends of which are attached to the lower edge of the chamber, G, and one of the uprights, A.

The inner end of the cam, L, has teeth or projections upon it which fit in the links of a chain, N, which passes around the cam and also around a toothed wheel, O, on the shaft, C. P is a spiral spring which is attached to the back end of the fork, M, and to the frame, A. The prongs of the fork have a wire, *c*, attached to them, as in fig. 2.

The clay properly moistened is placed in the upper part of the chamber, and power being applied to the shaft, C, the plunger, I, forces the clay through the screen or perforated plate, K, which, on account of its taper orifices, compresses the clay as it is forced through them. Upon the succeeding stroke of the plunger, the clay is again compressed by being forced through the lower end of the chamber, G, owing to the inverted conical form of said chamber. As the plunger, I, rises, the fork, M, is forced forward underneath the chamber, G, by the cam, L, which is rotated by the chain, N, and the wire, *c*, cuts off the clay discharged from the press chamber, the fork being forced back to its original position, when the prominent portion of the cam has passed the shank, *a*, of the fork, by means of the spiral spring, P.

The clay is worked over till it is properly kneaded. The machine may be driven by any kind of power, and it works effectively and rapidly.

This machine is designed to have a stroke of 24 inches; cylinder 15 inches bore, and making 15 revolutions per minute. The cylinder is only 6 inches deep, therefore while the piston passes up and down above it, the attendant can put in the clay. A quantity of clay is moistened in the usual manner in a bin, and then thrown with shovels into the cylinder. The piston forces it down through the holes in the perforated plate, where it is drawn, as it were, into small strips three-eighths of an inch thick, that being the size of the conical perforations below, while they are one inch above. After the clay has thus passed through the plate, every succeeding stroke forces a new quantity through, passing it into the inverted conical chamber in a solid mass again, thus mixing it in a more perfect manner by passing it once through, than by working it four times over in the common way. The clay may be passed through the machine, as often as may be desired. The cutting device at the bottom is for cutting it off to drop on the floor, to allow of it being easily put into the proper bin. It is a machine well adapted for kneading clay for the finer kinds of pottery, stone ware, fire bricks, &c.

More information may be obtained respecting it, by letter addressed to Mr. Thayer, at Sandwich, Mass.

Inventors, and Manufacturers

THE SCIENTIFIC AMERICAN.

ELEVENTH YEAR.

The Eleventh Volume of the SCIENTIFIC AMERICAN commences September 16th next. It is an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

Its general contents embrace notices of the LATEST AND BEST SCIENTIFIC, MECHANICAL, CHEMICAL, AND AGRICULTURAL DISCOVERIES,—with Editorial comments explaining their application; notices of NEW PROCESSES in all branches of Manufactures; PRACTICAL HINTS on Machinery; information as to STEAM, and all processes to which it is applicable; also Mining, Millwrighting, Dyeing, and all arts involving CHEMICAL SCIENCE; Engineering, Architecture; comprehensive SCIENTIFIC MEMORANDA: Proceedings of Scientific Bodies; Accounts of Exhibitions,—together with news and information upon THOUSANDS OF OTHER SUBJECTS.

Reports of U. S. PATENTS granted are also published every week, including OFFICIAL COPIES of all the PATENT CLAIMS; these Claims are published in the Scientific American IN ADVANCE OF ALL OTHER PAPERS.

The CONTRIBUTORS to the Scientific American are among the MOST EMINENT scientific and practical men of the times. The Editorial Department is universally acknowledged to be conducted with GREAT ABILITY, and to be distinguished, not only for the excellence and truthfulness of its discussions, but for the fearlessness with which error is combated and false theories are exploded.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and PEOPLE IN EVERY PROFESSION IN LIFE, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them HUNDREDS OF DOLLARS annually, besides affording them a continual source of knowledge, the experience of which is beyond pecuniary estimate.

The SCIENTIFIC AMERICAN is published once a week; every number contains eight large quarto pages, forming annually a complete and splendid volume, illustrated with SEVERAL HUNDRED ORIGINAL ENGRAVINGS.

TERMS! TERMS!! TERMS

One Copy, for One Year	$2
" Six Months	$1
Five copies, for Six Months	$4
Ten Copies for Six Months,	$8
Ten Copies, for Twelve Months	$15
Fifteen Copies for Twelve Months	$22
Twenty Copies for Twelve Months	$28

Southern, Western, and Canada Money taken at par for Subscriptions, or Post Office Stamps taken at their par value. Letters should be directed (post-paid) to

MUNN & CO

128 Fulton street, New York